DESIGN FOR ALL - WORK FOR ALL

HANDBOOK FOR CREATING ACCESSIBLE ENVIROMENT

PART I - DESIGN FOR ALL IN CREATING ACCESSIBLE ENVIROMENT

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PART I

DESIGN FOR ALL IN CREATING ACCESSIBLE ENVIROMENT

Intro

People with different abilities are part of our community. They, like all others are entitled to play an active role in the community life.

In order to address the accessibility issues, various concepts and design principles have been developed and promoted under the umbrella of “Universal Design” and “Inclusion by Design”. Designers around the world have taken up the challenge and provided solutions to facilitate accessibility. For example, more thought is given to the design of automatic doorways and ramps to address various groups of users and to facilitate accessibility. Accessible toilet facilities are designed with baby safety seats, adult and child size fittings, and special support place with limited land resources therefore the use of every inch of land, especially in the urban area, has to be maximised. Efforts to provide barrier free access in an already cramped built up area is not easy. This has resulted in solutions based on minimum provisions which have been found to be insufficient and inefficient.

Objectives

The overall purpose of the study is to promote “Design for All” for public buildings and open space projects focusing on planning, building and maintaining an accessible environment. Also to provide necessary strategies to conceive employment and placement policy and obtain remarkable results from employing people with disabilities and with reduced mobility.

The specific objectives are:
• To increase awareness of Design for All accessibility issues;
• To initiate innovative design towards a more accessible and sustainable environment; and
• To recommend best practices and design guidelines on accessibility-to-all to facilitate the widest spectrum of users to access public buildings and services independently.

All-inclusive Accessibility Introduction

The concept of Design for All forms the backbone of all-inclusive Accessibility. It is a design approach to a universally accessible standard in which all products, environments and communications will allow for the widest spectrum of people in our communities regardless of diversity, age and ability.

Inaccessible design > Disabled Access > Barrier-Free Access > Design for All

Design for All requires a quantum leap in thinking from the concept of barrier-free access or disabled access. It is a positive approach of design to achieve an inclusive integral design that is not only accessible by the widest possible array of users based on their abilities but the solutions would also be beneficial to most of the users. Unlike disabled access or barrier-free access design, Design for All is not about designing specialized features for access, it is a common practice design approach for achieving good and sustainable architectural accessibility.

Design for All Approach

Design for All provides barrier-free environment allowing for the inclusion of the widest possible array of people of all diversity, age, ability or disability. It is recognized that Design for All is not designing for “all” but for the widest spectrum of users.

Travel chain analysis

In order to achieve Design for All accessibility, the complete travel chain must be considered from the person’s flat to the street; to the public transportation; on the transport vehicle; to the drop off point; to the destination building; inside the destination building to the room where the intended function would take place; and finally the function itself.

The whole effort spreads across different parts of the built environment designed by different disciplines.
Architects safeguard the most important parts of all – the two ends of the travel chain – the departure points and the destinations. It is essential that the mini travel chains within each building are accessible.

This mini travel chain would probably involve:
drop-off point > approach > main entrance > lobby information> lift or escalator or staircase > upper lift lobby > corridor > internal door > room > intended function > toilet > return route > exit

After gaining access to the right place inside the building, it is most important to enable the intended function to be performed.

Some provisions for persons with disability are covered in the Planning and Construction Act from 1997 and Standards for accessibility for elderly, children and people with disabilities from 1984, such as the obligatory requirements for wheelchair space in auditorium; low public services counter; disabled toilet, induction loop for auditorium; and the recommended requirements for low level switches, high position socket outlets, etc. However, some provisions in buildings are not covered, for example, there is no specific mention of requirements for accessible drinking fountain and access to auditorium stage.

Seven Principles of Universal Design

Principle 1: Equitable Use
Principle 2: Flexibility in Use
Principle 3: Simple and Intuitive Use
Principle 4: Perceptible Information
Principle 5: Tolerance for Error
Principle 6: Low Physical Effort
Principle 7: Size and Space for Approach and Use

How safe, how comfortable and how user-friendly
The access requirements for a lift is well defined and standardized.

Design with a gentle sloping main access route is obviously safer, more comfortable and more user-friendly than a design with a main access having a few steps together with an alternative ramped access. If barrier free access features are taken as the main

access features, they not only provide a safer, more comfortable and user friendlier design in most of the cases, but also result in a more aesthetically pleasing design

Completion inspection on accessibility

Evaluating how safe, how comfortable and how user friendly is a continuous process throughout various stages. An inspection should be carried out near completion to test the accessibility of the whole travel chain.

Barriers in Accessibility

Barriers in accessibility may be defined as an object, which could be physical or immaterial, that obstructs or impedes accessibility.

Access route:
• Indirect routing
• Lack of directional signs
• Not segregated from vehicular route
• Uneven surface
• Obstacles such as bollards, fittings, trees, curbs, drainage gratings positioned on access pathways

Ramps & gradient:
• Routes with gradients too steep
• Cross falls too great
• Steep and long gradients
• Inadequate or lack of landings
• Lack of appropriate handrails
• Lack of appropriate tactile ground surface indicators
• Slippery ground surface finishes

Car parking :
• Lack of designated accessible car parking
• Inadequate size of parking spaces
• Lack of dropped kerb for convenient access from the parking spaces onto the pavement

Steps & stairs:
• Steps only in the path of travel from the property boundary or the car park to a building or entry into a building
• Riser and tread of the steps not uniform or not within recommended dimensions
• Inadequate or uneven lighting throughout
• Lack of colour contrast on nosings

• Lack of handrails or handrails on one side of stairs only
• Handrails not extending beyond the bottom and top of stairs
• Lack of appropriate tactile ground surface indicators or Braille signage on handrails

Entry:
• Narrow doors
• Inadequate circulation space
• Inadequate landings
• Excessive force required to open the door
• Doors opening into access route
• Thresholds not flushed with floor
• Inadequate clear wall space for maximum door swing

Signs:
• Use of non-international standard signs
• Lack of tactile surface and Braille
• Size too small
• Lack of colour contrast

Visual and audible facilities:
• Lack of visual tactile and audible signage
• Lack of sound reinforcement where public address facilities are provided
• Inadequate lighting

Planning Approach to Minimise Barriers

Accessibility is the basic requirement of a building, a facility or information. Accessibility of a building and facility involves not only movement within the building but also movement from the street or parking area through the property and building entrance.

All-inclusive accessibility is not planning a separate approach for the elderly, the wheelchair users or the visually impaired. The solution is derived from understanding the needs of people and applying inclusive design to achieve a common access. It should also facilitate users to access building independently. It is a positive design approach to cater for the widest spectrum of users. No user groups should be left to enter via the back door, the goods lift or a sub standard facility.

Key issues of accessibility

Anthropometrics
Continuity
Connectivity
Equality
Safety
Sustainability

Anthropometrics:
The body and reach characteristics of people have a direct influence on accessibility. It is necessary to consider a broad range of population and take account of the physical build of females and males, as well as size variation and capability between different ages in achieving

Continuity:

The concept of continuity is very important when planning for all-inclusive accessibility. For example, a continuous accessible path of travel should be provided without barriers. When there are level changes along the path of travel, the continuity must be maintained by a ramp or other means such as a lift. At the same time, information must be provided at conspicuous locations and intersections and the display should be continuous to lead to the final destination

Connectivity:
It is desirable to minimise distances travelled between accessible elements of buildings and facilities. Covered link bridges at upper levels are useful for connecting several blocks of building on the same site. It is a good means to connect facilities and save effort on travelling up and down between the buildings.

Equality:
The essence of Design for All is to provide equitable access for all people including persons with a disability. For example, if a directory map is provided at the main entrance, it should be accessible to all users. Hence the information on the map should be accessible by all including the elderly, the physically handicapped, the visually and hearing impaired.

Safety:
Safety in access as well as exits are of prime concern for everybody especially the elderly and the disabled as they are less capable to handle emergency and crisis situations on their own. Safety of a built environment and safety of fittings and equipment are prime considerations. Pre-planned barrier free routings, visual and audible signals/ signage would enhance the safety aspects.

Sustainability:
If a building or facility is user friendly, accessible and everybody can enjoy it, then the built environment is more sustainable. Maintenance of the elements that make the building or facility accessible must be kept in good order such that people can continue to enjoy them. In addition, if major alteration works are necessary, opportunity should be taken to further improve accessibility.

Inclusion:
There are different options to provide access to a building or a facility. The essence is to provide accessibility by inclusion. An accessible path that does not incorporate steps, humps, stairways, revolving doors, escalators or other impediments that prevents the path being utilised by all people would be an example of inclusive design. The accessible path would be user friendly to all.

Way forward
Apart from the key issues, design solutions should also take into consideration technological advancement. For example, the motorized wheelchair enhances mobility and capability of wheelchair users but they are also bigger and heavier with a battery, therefore appropriate loading and size allowance are necessary. Another example is the development of new materials to pick up audio information. Tactile surfaces are developed to allow people using the guiding stick equipped with a receiver to pick up information. The problems and solutions are not frozen at any time. They change with time and it is a continuous process to improve accessibility in the built environment.

Key Features of Design for Access

Access to facility
(a) Connection with road/street/ pathway

(b) Entrance
(c) Initial access to entrance/exit - The most commonly used entrance/exit is the main entrance
(d)Door - Glass swing doors are used for major entrances.
(e) External signage
Freestanding sign posts and wall-mount sign plates are provided from the street level to the deck level informing visitors of the entrances, disabled entrances, major functional facilities, and facilitating wayfinding.
(f) Change in level
The level difference from the main street level up to the entrance of the various facilities is served by stairways, ramps, lifts or escalators, which are all integrated into the landscaping area.

(g)Ramp/sloping ground/stair and step
Sloping grounds are used as far as practicable as passageway to facilitate access for all persons.
Gentle gradients are used to enhance walking or wheelchair comfort. Ramps are provided with intermediate landings, tactile at top and bottom ends, and footlights. Stairs and steps are provided with contrasting nosing and tactile at top and bottom ends. Integration of these features with the landscaping area also increases the number of people who could share the enjoyment of the landscape beauty. These external surfaces are stable, firm, non-slippery and lie generally in a continuous plane.

(h)Handrail
Mounting heights of handrails for staircases, parapets and ramps are designed to suit people walking and in wheelchairs respectively. Brackets are recessed to form continuous handrails. Braille directional signs are installed at the top and bottom ends of external handrails for direction indication.
However, the external stainless steel handrails may retain more heat under bright sunlight.

(i) External tactile path
Comprehensive tactile paths both on street level and deck level to be provided to assist wayfinding, leading from various essential areas like Park, Road and Bus Terminus. Portions of the external tactile path are also accompanied by footlight flushed with the ground.

Information

(a) Public counter
Public counters inside the facility include information service counters, book check-out counters, and counters at cloakroom. These counters are generally conveniently located at prominent locations, and are provided with high and low portions. Some are also with protruding counter tops, some with notches for holding crutches, walking sticks and alike.

(b) Directory
A ceiling hung digital display directory is provided at the main entrance. The size and colour contrast are considered adequate. Induction loop system is available at one borrow/return counter. Braille directory is to be provided.

(c) Signage and guidance
Floor numbering and facility signs are mostly wall-mounted with contrasting colours for the signs and the wall surfaces. Direction indication signs designating various functional

spaces and facilities are ceiling hung at every floor. Apart from letters, numerals and characters, pictorial symbols are incorporated to facilitate comprehension.
Symbols of accessibility are also provided on the same sign. Braille signs are only provided in association with lift installation.

(d)Wayfinding
The atrium is punctuated by passenger lifts at one side and escalators at the other side. These prominent features contribute to a brief mental map for people to specific floor layout planning and design features are essential for users to follow the sequence of located opposite to the lift zone; carpet borders and walls of different colours on different floors fronting the lift and escalator landings to enhance identification; floor directory and computer information kiosks along passageways; and staggered borrow and return counters on the way to the exit.

Pathway to functional areas

(a) Internal tactile surface
Tactile is used to alert people to different types of facilities, to hazards and changes in level at top and bottom of ramps, escalators and staircases, and as directional paths leading to major functional areas. Internally, tactile guide paths also lead from various entrances to information counter and lift zone.

(b)Turning space
Sufficient floor spaces are provided at ramp landings, lift landings, after door swings, and passageway dead-ends to facilitate turning of wheelchairs.

(c)Width of pathway and projections
Integrated passageways with the main functional spaces can enhance free movement and minimize conflict due to crowdedness. Obstruction due to any projections is also eliminated with this open plan design.

(d) Luminous contrast for floor and wall finishes and at changes in level
The use of lighting to define spaces can assist in orientation and to prevent accidents. Glazed panels are used for both the footbridge parapet natural daylight, which helps to distinguish the floor and wall / vertical surfaces. At each floor level, combined with the use of different colours for floor and wall / parapet surfaces, luminous contrast is achieved to outline the shape of the space. Wall-mounted footlights are provided at ramps for night use.

(e) Surface material and texture
The selected external ground surface materials are in general firm, stable, durable, even and slip resistant. Gratings have been avoided along predominant direction of traffic. Drainage is directed to fall towards the edge channels to minimize interruption to the walkway users. The internal floor surface is mainly carpet tiles to maintain good acoustics and slip resistance. Small areas of granite tiles are used at lift and escalator landings and entrance lobby areas. Door mats are installed at entrance doors levelled.

Ease of use of facilities
(a) Height of fixture and fitting
The facilities and services are generally provided with two heights to suit people in standing position, people with short stature, children, or wheelchair users. The counters, computer kiosks, public pay phones, drinking fountains, hand dryers, urinals, and lift buttons are all fitted with high and low heights.

(b) Seating and bench
External fixed benches are easily accessible at the walkway, and are provided with side space for wheelchair companion. Internal seating can be categorized into fixed leisure seats and movable reading seats at booths or computer stations. The fixed seats are either sofa or multiple chairs in a row. All are easily accessible along the passageways. Seating at study booths or computer stations are all movable for flexibility and convenient use by wheelchair users. Space for wheelchair users has been reserved at the fixed seating inside

c) Kneespace for wheelchair
Priority reading tables with adjustable height are provided to accommodate the armrest of wheelchair. Other facilities like counter tops, computer information kiosks, public pay phones, drinking fountains and hand dryers for wheelchair users are designed with kneespace provision.

Lift and ancillary facilities
(a) Lift

Provision of access for the disabled has been included in the lift installation design. Features include wheelchair signs, high and low button panels, Braille sign at call buttons, contrasting colour Braille floor numbering signs at landing door jambs, audio announcement and visual plasma display information inside the lifts for the visual and hearing impaired.

(b) Parking and access to facility
Carparks for people with disabilities are designated close to the entrance to facility and lift tower leading to main entrance.

(c) Rest room, sanitary and baby care facility
Rest rooms, sanitary facilities and drinking fountains are available at every floor. Baby care facility is provided inside the toilets for people with disabilities. There are a number of good features that cater for the people with disabilities, the elderly and people with babies. Examples include tilted mirror in disabled toilets; water closet for people with disabilities with concealed cistern located away from the rear wall to facilitate wheelchair transfer; assisted handrail for one urinal in each male toilet; one recessed hand dryer at high level and a lower protruding one for wheelchair users.

User management

(a) Client's support
Integrated design of access for all people into the general design requires understanding and support from the client for pragmatic implementation. In the design of the Library, the client and the architect worked well to integrate many accessible elements with functional requirements.

(b) Furniture and equipment planning
Furniture and equipment of the Library was mainly procured by the client, with professional advice from the architect. The loose and movable furniture and equipment are fit for their intended purpose and accessible to the user groups. For example, high and low bookshelves are provided for adults and children respectively; reading tables with adjustable heights to accommodate armrest of wheelchairs are designated for use by people with disabilities. They contribute towards the provision of a comfortable and accessible environment for the users.

(c) Building management
To achieve sustainable physical and sensory accessibility to the facilities, building management plays an important role to control the daily operation of the facilities. Accessibility requires good management to all areas including the street, the open spaces, and in areas within and around the building. The building management of have as the aim to upkeep the services and built environment building.

(d) Maintenance of facility
Frequent and proper maintenance is essential to keep the services and facilities in good working order and make the original design sustainable. Accessibility cannot be maintained if the floor surfaces warp; or the materials degrade due to wear and tear; or if the Braille signs are flattened; or if the signage is defaced.

(e) Impact of alteration and addition works
When the building is in operation, user feedback is valuable in planning for improvement of the built environment. Some works have been carried out to enhance barrier free design, for example, enlarging the flat landing area at ground level of the lift for people with disabilities, and the addition of a breast-feeding room.

Comments from users

The significant comments received from the users are summarised.

Circulation:
• The manually operated swing doors at main entrance on should preferably be changed to auto-doors in view of the busy traffic every day.
• Number of lifts for passengers and people with disabilities should be increased to minimize long queues and long waiting time. Increasing the number of cargo lifts could also improve the service.
• Circulation by escalators required longer travelling time and thus was not popularly used.
• Addition of indicator at lift landings to show the location of lifts would be useful.

Signage and information:
• Signage at ceiling level was less noticeable. Increasing the number and enlarging the size of the signage and placing them at lower prominent locations were preferred.
• Stronger colour contrast of the signage would be more eye-catching and could provide clearer information.
• More directional signage to frequently visited facilities like toilets, photocopying machines, cloak room, computer resource centre, baby care facilities, would help in way finding. Some provisions, like baby care facilities and drinking fountains, might be under utilized as people do not know of their existence due to inadequate information.
• Information on the signage should be clear and the direction indication should be easy to understand.
• More maps showing fire escape routes would be useful.
• Clear floor numbers visible from opened lift cars should be added to lift landing on each floor.
• More information counters near the lift landing

Sanitary facilities:
• Provision of separate baby changing facilities accessible by either sex of parents in conspicuous locations with more prominent signage could enhance better utilization of the facilities.
• More toilets would be desirable.
• The flushing handle required a strong pressing force to operate. This might contribute to the frequent unhygienic conditions of the toilets.
• Floor surface material for areas in front of toilets should be changed to a type that produced less noise when people walked on it.
• Addition of staff changing facilities would be desirable.

General facilities provision:
• More designated facilities should be provided for the people with disabilities.
• Student study rooms should be provided.
• A zone for cell phone users should be provided to control the noise.
• More covered areas and benches could be provided at the external areas.

Furniture and equipment:
• More seating and reading booths would be desirable.
• Reading desks and chairs should have adequate width, appropriate height, and adequate legroom for user's comfort.
• Computer stations should have adequate width and appropriate height for comfortable seating and operating the mouse.

• Each computer station could be partitioned to minimize disturbance amongst different users.
• Footrest should be adjustable to suit different people.
• More locker facilities would be desirable.
• The uppermost rows of bookshelves are too high to be reached, especially for the persons with

Indicators for improvement

Based on the survey results and technical studies, main areas for improvement are identified as follows:-
• Automatic main entrance doors should be provided as the large doors are less easy to open while carrying heavy books and other personal belongings. Auto door sensors by weight detection are better to detect the wheelchair user and the sensor should allow more time for slow movements of handicapped people and the elderly.
• Lifts serving different zones should be grouped together or in close proximity for easy access.
• Users, including young adults and students prefer lifts than escalators, as the service is direct and fast. More lifts should be considered as they serve everybody and not just the elderly and people with disabilities.
• External signage and wording should be of a bigger size and stronger colour and luminance contrast, especially if they are fixed at high level. Signage and location map at lower level is useful and facilitates way finding.
• Some users did not know that the baby care facilities are installed inside some toilets and some parents used the sofas for baby changing. Provision of a unisex baby changing facilities should be considered and more conspicuous signage should be provided.
• More space for approaching facilities such as drinking fountain should be considered. Adequate access should be provided for users including people in wheelchairs to use the drinking fountain and for people to pass through if the facility is located in circulation corridor.
• The general public and staff are not familiar with assistive devices. The facility would be better utilised if more people know about its function and availability in the building.
• The provision of an information leaflet listing the facilities for the people with disabilities and appropriate signage would help in
• Ramp access to the stage in the lecture theatre should be provided. Same approach to the stage for everybody and access from the front of the stage is preferred.

Other important points
With reference to the key issues of planning approach, the main points to consider in accessible design are as follows:
• Connections to major transportation nodes adjacent to the facility are a priority consideration.
• Provision of a continuous barrier free routing, adequate signage and lifts from the street level to facilities in the library enables users of all abilities to visit the Library freely.
• Common access for a wide range of users should be provided.
• Fittings with size variation, such as adult and child size toilets and basins, should be provided to suit the elderly, adult or child.
• Inclusive design features, such as low level computer kiosk with movable seat and adjustable computer tables, can be made attractive and enjoyed by all users including those in wheelchair.
• Accessible design considerations should cover functional requirements, information services, furniture and equipment. For example, the provision of a notch on counter top for holding the walking

Ease of use of facilities

(a) Seating and bench
Seating and benches are arranged along the walkway at adequate intervals. They are provided with space at their sides for wheelchair users to sit with their companion.

(b) Height of fixture
Sufficient space to be provided for wheelchair user to access and use the computer information terminals. The screens are installed at two heights so that people sitting and standing should use.

Indicators for improvement
Based on the survey results and technical studies, main areas for improvement to the park areas are identified as follows:-
• Parking facilities and passenger loading area at the park should be considered. Better accessible linkage with the street and transportation nodes would promote more visitations to the park.
• Provision of intermediate level landings to long walkways and ramps are very useful for taking a rest, or for appreciating the planting around the area or as vista points.
• More seating bench under shelter along long walkways should be provided. Seating bench on sloping grounds should be accessible by wheelchair users and barrier free.
• More provision of handrails along long ramps and wide staircase is desirable for the elderly and people with walking difficulties. The material of the handrail should not retain too much heat otherwise they cannot be used under the hot sun.
• More provision of directory and signage are required, especially at major junctions. Main directory map of the park or signage showing the facilities including accessible routing and facilities for the people with disabilities would be very useful. They should be located at the main entrance of the park and at major interest points to guide users.
• More provision of accessible drinking fountains should be provided near the toilet block and at major interest points. Information and signage regarding location of drinking fountains should be provided.
• Safety aspects of water areas should be considered. The use of colour contrast material or texture of pavement should be useful.
• More information on availability of facilities is required. For example, some users do not know that baby care facilities are installed inside the female toilet and many parents use the seating bench for baby changing. Provision of a separate baby changing facilities accessible by either sex of parents with conspicuous signage would promote usage.
• Facilities such as public telephones should be considered for emergency use. Information regarding their availability should be clearly indicated.
• Floor mount fittings such as light fitting should be flushed with the ground surface.
• Exhibition display on raised platform should be made accessible to all users including the wheelchair users.
• Fixed furniture such as stools in front of computer terminals may obstruct some users. At least one of the fixed stools should be movable to allow direct approach for all users including the wheelchair users. Equipment at high and low heights should be provided for adult and children.

Handrails:
• Materials that retain too much heat should not be used for external handrails.
• Handrails should offer a firm grip.

Signage:

• More conspicuous signage and way finding provisions can improve accessibility and facilitate information transmission to users and visitors

User feedback and suggestions of the visually impaired

Tactile surfaces:
• Continuous tactile path or handrail to guide direction to frequently visited activity areas should be provided.
• Tactile warning before staircases is essential to prevent accidents.
• Tactile for identifying the way to entry and exit points is equally important.
• Persons using guiding sticks can be a left hander or right hander. Tactile paths should be laid at a distance of 300mm from wall, fittings and other obstacles.

Passageways:
• Corners, edges or columns should be adequately protected or highlighted.
• Projections or wall fittings along access path should be above height of door head to avoid obstructing the users.
• Excessive lighting contrast, either too bright or too dim, or glare, is not appropriate.

Handrails:
• Handrails should be of colour and luminous contrast to the wall surface for easy identification.
• Handrails should be continuous and installed with raised letters or other device to indicate door opening position.

Staircases:
• Contrasting nosings are essential to assist low vision persons to use the staircase.
• Treads of a flight of stairs should have even dimensions.

General comments
• The limited strength and range of reach of people with disabilities and the elderly should be considered.
• Spaces for wheelchair manoeuvring and other assisted devices such as shower bed and hoist should be allowed.
• Closets should be fitted with high and low hanging rods.

Passageways and doors:
• Natural lighting to passageways is good for night or day orientation.
• Auto-doors should have delay-closing device or with a sensor covering a wider area without blind spot, especially when one is in the midway of the doorway susceptible to accidental injury by the closing door.
• Low-level exit signs along corridors are useful to both people with and without disabilities in case of fire, especially if the high-level ones are concealed by smoke.

Way finding and communication:
• 3-dimensional maps or models are attractive and useful for communication.
• Audio and talking signs are useful for information transmission.
• Provision of a series of maps of different scale in major transportation interchange showing the district, the street, the building and information on building entrance, stairways, dropped kerbs and lifts is useful.
• 3-dimensional objects fixed at the end of handrails to rooms can be good landmarks for identification, especially for those who have not learnt the Braille system.
• A Braille map of the toilet layout located outside the toilet entrance is a good tool to assist the visually impaired persons to access and exit the facility.

• Floor-mounted urinal stall is an option that facilitates by guiding stick or by foot. Provision of two tactile steps fixed on the floor in front of the urinal

Special concern for the elderly

• Rest areas along long passageways are desirable for regaining strength due to lower tolerance of the elderly.
• Pathways with covers and skylights are desirable.
• Low reflective surfaces are preferred to reduce hallucination. The use of mirrors or mirrored surfaces should be minimized.
• Doors and exits should be conspicuous for easy identification and to avoid bumping into them.
• Both active social areas and quiet corners for rest or listening to music are essential.
• Floor surface must be non-slippery and level as the elderly are easily tripped.
• Visual objects are useful for identification.

Suggestions for a (rehabilitation) garden
• Both active and passive activities should be accommodated. Simple exercise equipment, bars and rails can be provided.
• Sensory stimulation such as smell of flowers and sound of water, tactile exercise surface is good.
• Rest areas with shade should be provided.
• Provisions for goldfish feeding and rabbit rearing is useful for sensory stimulation.
• Safe and unobstructed access is essential.

Access to facilities

Access strategy
• Develop access strategy at an early stage of the design.
• Facility should be accessible to the widest spectrum of users.
• Consider means of escape for users of different needs, abilities and disabilities.
• Collaborate with users and operators for client's needs.
• Prepare an Access Plan and an Evacuation Plan
.
Connection with public street
• Identify the connection routes from road, pavement, footbridge and subway at various directions.
• Consider connection from major transportation drop-off and for pedestrian access.
• Consider vehicular access from the public street to the carpark or loading/unloading facility.
• All accessible routes should be connected to a major entrance of the facility.
• Integrate or segregate the accessible routes for different user groups as appropriate.

External signage
• Provide sufficient directional signage at prominent locations.
• Allow ancillary lighting for good visibility of the signage at night time.
• Signage should be pictorial in addition to words and letters, and should be easy to comprehend.
• Signage should have contrasting colours and be eye-catching.
• Words and letters should be of suitable size and colour for good legibility.

Pathways Configuration
• Pathway width should be sufficient to allow at least two wheelchair users to pass each other.

• Straight pathway is preferred.
• If winding pathway is provided, turning should be with the largest possible radius and with sufficient turning space, avoid acute turning.
• Pathway edges should be conspicuous and protected to avoid wheels from dropping off.
• Projections should be of suitable height and projecting width to avoid accidental bumping, and should not obstruct the pathway users.
• Channel grating slots should not be parallel to the major traffic direction, slot sizes should be small enough to avoid trapping of crutches or wheels.
• Effective lighting should be provided.

Changes in level
• Ramps, dropped kerbs or sloping grounds should be used to connect changes in level, in addition to steps and stairs, if any.
• Warning should be provided at a suitable distance before the change in level.
• For slight change in level, a full width continuous sloping ground accessible for all is preferable than a separate ramp.
• Effective lighting or footlight should be provided to make the change in level clearly visible.

Ramps and sloping grounds
• Gradients should be as gentle as possible.
• Straight ramps or sloping grounds are preferred.
• If winding ramps or slopes are provided, turning should be with the largest possible radius and with sufficient turning space; avoid acute turning or turning with steep gradient.
• Sufficient intermediate landings for rest, preferably with chairs or benches, should be provided.
• Continuous handrails should be provided for assisted walking, preferably with two mounting levels.
• Channel grating slots should not be parallel to the traffic direction, slot sizes should be small enough to avoid trapping of crutches or wheels.
• Effective lighting or footlight should be provided to make the ramp or sloping ground clearly visible.

Stairs and steps
• Handrails should be provided on both sides.

• Central handrails should be provided for stairs and steps of excessive widths.
• Sufficient intermediate landings, preferably with chairs, should be provided for rest and regaining strength, especially for long consecutive stairs.
• Warning should be provided at a suitable distance before the first and last step.
• Every step of a single flight of stair should be of constant tread width and riser height.
• Nosings should be of contrasting colours to the tread and riser.
• Effective lighting or footlight should be provided to make every step clearly visible.
• Natural lighting and light fixtures should be so positioned as to avoid glare or the walking person's own shadow casting on the steps.
• Underside of staircases with less than 2000mm headroom should be blocked by guardrails or other form of barriers to stop people

Floor surface materials
• External ground surface materials should be nonslippery.
• Floor materials should not be too rough to make the surface too bumpy or to give wheels flat tires.
• Surface materials with less glare are preferred.
• Material joints should be smooth with minimum recess/projections and minimum width.
• Floor surface should be level and even.
• Types of surface materials should preferably be
different for the main pathway and other pathways, but too many different surface materials may cause confusion.

Handrails
• Handrails at two-level mounting heights should be provided for places frequently visited by children.
• Handrails should be continuous with recessed brackets.
• Ends of handrails should be returned to the wall, floor or post so that they do not become obstructions.
• Handrails should be securely fixed and durable to avoid posing danger to users relying on them for assisted walking.
• Materials should be smooth and offer a firm grip.
• Size and shape of handrails should offer a firm grip.
• Materials for external handrails should not retain large amount of heat or coldness.
• Braille, tactile or 3-dimensional signage at top and bottom ends of handrails can provide direction

Tactile surfaces
• Continuous tactile guide paths should be provided to entrance/major facilities, information counters, Braille maps/directories and lifts.
• Directional, positional, location and hazard warning tactile surfaces should be correctly laid to convey correct information.
• Tactile surfaces should be laid at a distance from wall surfaces to facilitate left handed or right handed persons with guiding sticks.
• Avoid any door swings into the tactile surfaces.
• Tactile surfaces should preferably be segregated from pathways for wheelchair users to avoid conflict between the two user groups.
• Contrasting colours can make the tactile surface noticeable.

Luminous contrast
• Luminous contrast should be provided to distinguish floor and wall surfaces.
• Luminous contrast should be provided at changes in levels.
• Too strong luminous contrast is undesirable to low vision persons.
• Natural lighting provision at passageways or corridors provides clues and stimulation for day and night orientation.

Parking and loading/unloading areas

Run-in/out

• Location of parking areas and loading/unloading areas should be conspicuous at the run-in/out, with adequate directional signage wherever necessary.
• Signage for the direction to way out should be conspicuous from the carpark.

Accessible carpark

• Carparks for people with disabilities should be in close proximity to access the lifts.
• A smooth and safe accessible route should be provided from the carparks for people with disabilities to the major facilities, entrance or lift lobbies.
• Sufficient side space and headroom should be provided for the wheelchair user to get on and off the car, and for picking up and setting down the wheelchair.

Loading/ unloading areas

• Loading/ unloading areas for vehicles with wheelchair passengers should be provided near the access to main entrance or lift zone.
• A smooth and safe accessible route should be provided from the loading/ unloading areas to the major facilities, entrance or lift lobby.

External areas and landscaping

Street furniture

• Street furniture should be positioned so as not to obstruct the passageways.
• Lighting posts or columns should be conspicuously marked at eye-level.
• Low-level bollards and chain-linked posts are hazardous and should be avoided.
• Bollards should have a colour or luminance contrast feature.
• Litter bins should be of a big opening for easy dumping of litter with one hand.

Trees and plantings

• Tree branches and plantings at sides of pathways should be trimmed to avoid obstructing the users.
• Ends of tree stakes should be properly trimmed to avoid hurting people.
• Plants and flowers with fragrance and bright colours are preferable as sensory stimulation to visitors.
• Flower beds are preferably to be tilted for enjoyment by children and wheelchair users.
• Raised flower/planting beds can be provided to allow visitors to approach the flowers without bending.

Rest places

• Sufficient seats and benches should be provided for rest.
• Seating and benches are preferably with shades or covers.
• A side space should be provided to benches to allow the companion to sit next to a wheelchair user.
• A clear space should be provided to allow a wheelchair user to access and turn at the rest place.
• A wind-resistant shelter is preferable.

Visual access

• Trees and flowers of aesthetic quality should be planted within the sight line from benches or rest places.
• Framed vistas are preferable.
• Flower beds with distinctive colours can provide sensory stimulation to visitors.

Water areas
• Disposition of water areas should be conspicuous to prevent persons falling into water accidentally.
• Water areas can be raised to allow wheelchair users to touch the water surface.
• Protective barriers at shorelines should not obstruct

Entrances and exits

Configuration
• The entrances should be at prominent locations.
• Entrances should be marked in a special, recognizable and welcoming way.
• Effective lighting should be provided to make the entrances visible.
• Entrances should not have any crossover with vehicular traffic.
• Entrances/exits should be on level ground to allow the widest spectrum of users to pass through.

Doors
• Door location should be prominent with sufficient space for access.
• Doors should be easy to operate.
• Door for wheelchair access should have a level landing area after the door swings.

Lifts
Operation
• Call button at foot level in addition to hand-operated level should be considered.
• Call buttons should be of sufficient size and conspicuous.
• Opening time of the doors should be sufficient for wheelchair access/exit or slow-walkers.
• Extended door open button is preferable.

Interior
• Mirror or high reflective wall surfaces should be avoided to reduce hallucination.

Way finding, signage and guidance

Information counters
• Information counters should be at a prominent location near the entrance.
• Tactile guide path should lead from the entrance to the information counter, and from the counter to major circulation route, lift zone or major
• Audio aid should be provided for information transmission to hearing impaired persons.
• High and low counters should be provided.
• Low counter should be with a projecting counter top to provide knee space for wheelchair users.
• Notches at sides of counter tops are preferable for holding crutches, guiding sticks, and umbrellas

Orientation
• Internal layout for public facilities should be able to communicate itself to orient visitors with a sense of direction within the space.
• Major functional points should have a heightened design language to tell its location.
• Spatial treatment of different facilities should be able to reflect their relative significance.

Landmarks
• Landmark objects can assist at way finding decision points.
• Examples of landmarks include a sculpture, a wall painting, a tree or planting, or a water feature.

Signage disposition
• Signage should be adequately provided at eye-catching locations at an appropriate height and with an appropriate size.
• Directional signage should be provided at way finding decision points.
• Effective lighting should be provided to make the signage noticeable at all times.
• Warning signs should be provided for all clear

Information transmission
• Directional and location signs should be provided to give information on accessible routes, lifts and escalators, entrances and exits, information counters, sanitary facilities, health care facilities, communication facilities, and functional areas.
• Assistive listening systems should be provided for hearing impaired persons.

Maps and directories
• Adequate maps and directories, with graphical and text display, Braille and audio types, at both entrances and inside spaces can help users to recognize their present position and assist in orientation and way finding.
• Maps can be of a series of scales to convey different information.
• Accessible routes to major functional areas for the user groups with disabilities should be indicated, including positions for dropped kerbs, ramps, and lifts.

Graphical details
• Contrasting colours should be used for the signs against its background.
• Pictorial signs should be provided in addition to words and letters.
• Words and letters should be of adequate size, height, boldness and suitable fonts for legibility.
• Graphics and wordings should be provided with clear sentences or short words.

Sanitary and health care facilities
Facilities to be provided
• Accessible toilets should be provided.
• Unisex toilets people with disabilities are preferable for the carer to assist the wheelchair user.
• Baby care facilities should be provided for places with public visits.
• Breastfeeding rooms should be provided for places with public visits and located away from the toilets.
• Family toilet cubicles with adult and child size water closets, high and low basins, and a baby safety seat is preferable.
• Drinking fountains of two mounting heights should be provided and preferably located away from the

Special features in accessible toilet design
• Floor surface material must be non-slippery but should not trap dirt or water.
• Effective floor drainage should be provided to maintain a dry floor surface.
• Floor drain covers should be fixed flat on the floor surface without any projections to prevent people from tripping over.
• Cubicle locks should be easy to operate without the need of strong finger force.
• Basins should be provided with counters or a flat surface for placing things.
• Notches at basin counter edges are good for holding walking sticks, umbrellas and alike.

• Soap dispensers should be placed within the range of reach by persons of tall and short stature.
• Hand dryers should not be positioned as an obstruction or a hazardous projection.

Provisions for visually impaired persons
• A Braille map at entrance wall to the toilet is useful to tell the location of basins, cubicles, urinals, hand
• Guidance should be provided to lead the visually impaired persons to get out of the toilet.
• At least one urinal should be floor-mounted to facilitate tapping by the visually impaired person's

Provisions for persons of physical disability
• Grab bars should be provided to one urinal, one basin and inside one toilet cubicle.
• At least one basin and mirror and one urinal should be mounted at a lower level.
• Hand dryers for wheelchair users should be protruding to provide knee space but should not become an obstruction.
• Mirror inside toilet for people with disabilities should be tilted towards the floor for use by the wheelchair users.

Provisions for baby care and children
• At least one basin and mirror and one urinal should be mounted at a lower level for children.
• One water closet is preferably to be with a lower seat height for children.
• A basin, a small counter top, hooks or notches for holding handbags, and a litter bin should be within arm's reach from the nappy-changing mattress.
• Family toilet cubicles and spaces for breastfeeding are preferable

Furniture, fixtures and fittings
Configuration
• Furniture, fixtures or fittings should not obstruct a route.
• Fixtures and fittings should be easy to operate by all users.
• Furniture, fixtures or fittings should be approached without any barriers or changes in level.
• Adequate space should be allowed to access the furniture, fixtures or fittings.
• High and low mounting levels should be allowed for fittings like drinking fountains, public telephones, vending machines, door bells, lift call buttons.

Provisions for different user groups
• Furniture depths and heights should cater for the range of reach by wheelchair users, the elderly, as well as children.
• Seating and benches should be provided with side space to allow a companion to sit right next to the wheelchair user.
• Chairs should be provided with removable types in association with tables to facilitate wheelchair
• Knee space and sufficient height for wheelchair armrest should be allowed for wheelchair users to use the facility.
• Notches at table edges are preferable for holding crutches, guiding sticks, umbrellas, handbags, etc.
• Braille signs or audio guide should be provided to facilitate operation of the fittings by visually impaired

User requirements and building management

Client's support

• Integration of Design for All issues as normal design standards should be communicated to the client for better understanding and management
• Early dialogue between the designer, the client, the users and the maintenance agent would facilitate implementation of Design for All.

User requirements
• Close collaboration with the client and co-ordination of the user's requirement should be carried out at an early design stage.

Furniture and equipment planning
• Co-ordinate and advise the users on their procurement of furniture and equipment, taking into account the Design for All provisions.
• Position of furniture and equipment, especially the

Records
• Document the facilities and provisions for Design for All elements.
• Building plans showing tactile paths, designated carparking spaces, entrances, wheelchair manoeuvring spaces, accessible toilets, major directory signs should be kept as record.
• User manual for the project should be prepared for the client and users.

Building management

• Establish a building management plan to preserve and keep the Design for All provisions in good working conditions.
• Building management should periodically monitor and review to upkeep the standards of provisions.

Maintenance
• Establish a maintenance plan including inspection, maintenance and record of the works.
• Special attention should be given to timely repair and maintenance of essential Design for All elements, for example, broken tactile surfaces, so as to prevent the defects from becoming a hazard to the users.

Alteration and addition works
• Preservation of the existing Design for All provisions should be taken into consideration when planning for alteration and addition works.
• Considerations should be given to improve and upgrade existing accessible facilities in major refurbishment works.

Planning access to historical buildings

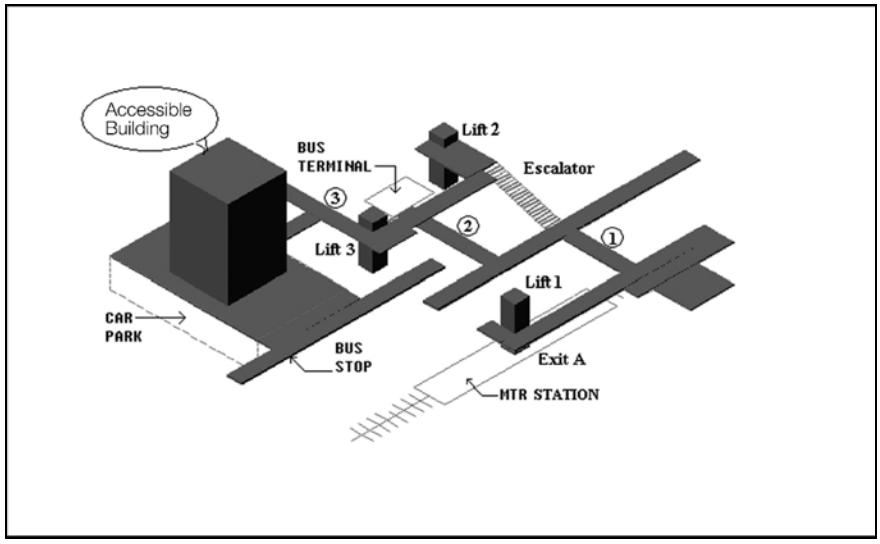
Historical buildings present unique challenge and limitations, yet access solutions in meeting the legal and functional requirements must be considered. Certain alteration and additions are required to bring the historical building in line with contemporary requirements although minimum intervention principal to the historical structure and building fabric should be observed.

In addition to the general approach to develop an access strategy outlined above, an audit is necessary to identify elements of significance that must be conserved and determine accessibility requirements. If the audit identifies certain elements that are unique and structural alterations are difficult, options for access would be to identify an initial access point, convert an existing window into access doorway, and/or utilise the

open courtyard for installation of a new lift. The access point for the people with disabilities should be accorded with due respects and should never be a back ally or back The possible future of the monument, the use of the building and the anticipated users are critical factors in formulating the access strategy. For example, the access solutions for a museum will be quite different to that of the Court. Easy access would increase visitation to the museum and open up the market whereas security requirements may be the overriding factor which will only permit limited access to the Court.

In addition to the requirements arising from the functional use of the building, the requirements of the authority charged for antiquities and monuments are also prime considerations.

The additional check list items for historical buildings are:
• Conduct building survey.
• Identify significant conservation elements.
• Identify existing and required access.
• Consider and evaluate access options in the context



Access plan
It takes a conscious effort to identify various accessible routes and ensure accessibility for different user groups. This includes the elderly, the visually impaired, the ambulant and wheelchair users, the speech and hearing impaired, as well as the fit and able.
The access plan can be developed into a diagrammatic access layout. This lay down the functional requirements for detail planning and can be used as an access guide. The access guide can provide information for the public at airport, border check points, tourist attraction and internet web sites to reach the facility.

Successful implementation of the access plan requires attention to detail during design, construction and maintenance.
The following are important items to consider:
• Identify accessible route from public transport, surrounding streets and link bridges.
• Identify safe access and entry level from pedestrian path, elevated walkways and car park area.

• Consider access options to facilitate independent access.
• Consider access to all levels in a building and/or open space to facilitate a continuous accessible path.
• Consider building/facility and service layout options to facilitate unimpeded access and flexibility in use.
• Consider information, way finding at public transport station and street access entry points to major facilities.
• Consider directory signage, information counters and other public facilities such as telephone booth
• Evaluate access and evacuation options including consultation with users/operators and relevant authorities.
• Prepare access plan including access requirements and management arrangements.

Evacuation plan

Means of escape (MOE) for the people with disabilities is also an area of concern as certain user groups are dependent on assisted escape. In addition, management arrangements are required to provide assisted escape for some groups with disabilities. Special arrangements are required for the ambulant and elderly people as well.

Options of assisted escape include:
• Fire separating measures to contain the fire e.g. fire shutters.
• Refuge area to enable people to wait for rescue e.g. provision of a refuge room next to fireman's lift lobby.
• Phased evacuation for the people most affected.
• Evacuation by fireman's lift under supervision.
• Evacuation by stairs with assisted device such

Surface and level changes

• Walkway surfaces should be stable, firm and should lie generally in a continuous plane with a minimum of surface warping.
• The cross slope of walkways should not exceed 1:50 except pavement on streets with the natural topography exceeding 1:20.
• Walkways should have continuous common surfaces and not interrupted by steps or changes in level greater than 6mm.
• Thresholds should not exceed 25mm in height and should be bevelled to facilitate smooth passage of wheels.
• The intersecting surface where a walkway crosses or joins streets, public footpaths, driveways or parking area should blend into a common level with slope no greater than 1:20, or a dropped kerb should be provided.

Drainage

• Fall and drainage shall be designed to minimize water ponding or flow of water across walkways.
• Channel cover gratings located in walkways should be designed with spaces less than 13mm. Holes in channel covers should not be grater than 20mm.
• Covers to a channel shall be flushed with the surface of the walkway.
• Outdoor walkways, ramps and their approach should be designed so that water

Braille and tactile guide

• Provide tactile guide path from the walkway entry point to lift zones and functional areas such as reception counters.
• Locations of Braille and tactile layout plan and the main means of vertical circulation (i.e. lifts, staircases and escalators) should be provided.

Ramps
Ramps are sloping walkways and should have the least possible gradient. It is desirable to have more gentle slopes and slopes are recommended to reduce to a gradient of 1 in 20 if possible. The maximum gradient of a ramp shall be 1:12 measured between any two points on the ramp.
The minimum clear width of a ramp shall be 1050mm. Similar to walkways, width of a ramp should be at least 1200mm for a wheelchair to turn or at least 1500mm for 2 wheelchairs to pass. Handrails shall be provided on both sides of a ramp.

Gradient, rise and landing
• The recommended maximum rise for any run is 800mm.
• Landings for turning and resting should be provided. A minimum landing of 1500mm by 1500mm shall be located at the bottom and the top of each ramp. A landing of width and length not less than the width of the ramp should be provided when the ramp changes direction.
The maximum length of a ramp run between landings shall not exceed 10m length of horizontal run or part thereof, and the landing should not be less than 1200mm long.
• Circular ramps are not recommended especially those with small turning radii, which would render wheelchairs difficult to manoeuvre.
• The cross slope of ramp surface should not be greater than 1:50.
• Landings shall be level and unobstructed by projections and door swings.
• If a ramp with a rise greater than 200mm leads down towards an area with vehicular traffic, a railing or barrier across the full width of its lower end, not less than 1500mm from the foot of the ramp should be provided for safety purpose.

Surfaces
• Ramp surfaces shall be stable, firm, and slip resistant.
• Provide tactile warning strips at the head and foot of a ramp and at intermediate landings.
• Use contrasting colours for floor and wall along ramps.
• Similar to walkways, ramps should be clear of obstruction. If unavoidable, they shall be extended downwards to the ramp level or be guided by tactile flooring materials.
• Outdoor pedestrian ramps should be provided with adequate drainage gullies at each side of the ramp to drain away excessive surface water running down the ramp.

Edge protection
• Ramps and landings with drop-offs should have edge kerb, railings, or projecting surfaces to prevent people from slipping off the ramp.
• Edge kerbs should have a minimum height of 100mm. For difference of adjacent levels greater than 600mm, lowermost solid protective edge should be 150mmhigh

Car Parking

Linking places
The availability of public transport, provision of car parking spaces and lay bys greatly improves the mobility and participation opportunities of the elderly, people with disabilities and adults with young children in our community.

Covered passenger drop-off area, taxi and specialized bus as well as parking areas should be considered for community facilities in general, especially for those venues attracting international visitors. Accessibility and connectivity should be amongst the major considerations in planning our built environment.
Designers should also refer to statutory requirements and guidelines relating to the provision of designated car park for the people with disabilities and street parking in the transport and construction planning & design regulations.

Accessible car parking

Accessible car parking means that sufficient space is provided next to the vehicle so that the wheelchair users and people requiring assisted devices can transfer and manoeuvre to and from the vehicle on level ground.

The following items require attention:

• The accessible car parking space should be on level ground and gradient of accessible parking area should not exceed 1 in 40.

• Locate designated parking bays for the persons with a disability close to the main building entry or lift lobby linking to the main entrance and upper floors.

• Provide safe passenger drop-off area for the elderly and people with disabilities near the main entrance if the parking space cannot be located close to the entrance or lift lobby.

• Provide safe accessible path to the building entry i.e. the main front door or the entry to the building used by most of the people

Provide conspicuous international symbol for the people with disabilities in front of each designated car park space, not lower than 1500mm from the floor so that it can be seen over the car, with good colour contrast to the background. • Provide kerb ramps for safe access to adjacent walkways.

• Post restricted speed limit sign at conspicuous locations in the car park.

• Provide adequate manoeuvring space at junctions where the vehicular access links up with the vehicular ramp to higher levels of the car park.

• Consider more gentle gradient like 1:8 for the vehicular ramp to allow for manoeuvring requirements of specialized bus (with lowering platform for wheelchairs and heavy loading of motorised wheelchairs), mini-vans and coaches.

Continuous accessible route

In planning for accessible parking, the principle of continuous accessible route and details such as signage, kerb ramps, car park entry and pay system etc. should be considered.

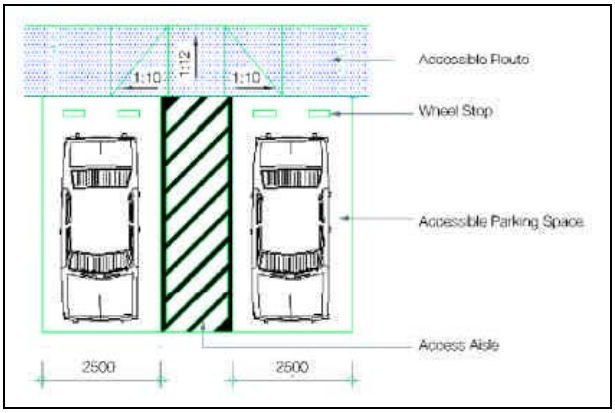
The following items require attention:-

• The access aisle for share use of two accessible car or van parking spaces should be preferably 1500mm and 2400mm wide respectively.

• Provide a ramp with handrail to eliminate any level difference between the car park floor and the main entrance or lift lobby.

• Provide slip resistant floor finish and paving at the accessible path.

• Post clear directory signage showing entrance to lifts and along the pathway to entrance lift



Multi-storey car parking

In planning multi-storey car parks, the general requirements for accessible car parking and accessible route should be compiled with.

In addition, the following items require attention:

• Consider provision of accessible car parking spaces at each level of the multi-storey car park.

• Post directory sign on each level of car park to indicate location of designated car park space.

• Provide ramps or wheelchair accessible lift linking different car parking levels for safe access.

• Provide simple and easily operated car park entry and pay equipment that can be easily approached by the driver. Systems that are restrictive and reply only on intercoms should be avoided.

• Post parking information and payment terms at entrance to a car park. If the pay arrangement involves paying at another location, suitable signage and direction should be posted.

• Provide suitable headroom for commonly used vehicles for a covered car park space and consider requirements for specialized bus and coaches.

Special vehicle parking

For facilities such as medical health care centres, elderly homes, rehabilitation centres and day care centers that require frequent service of special vehicles like specialized bus and ambulance, special consideration and designation of loading area and parking bays for these vehicles are required.

The designated space should be on level ground and close to the lift lobby, under cover, with suitable headroom and manoeuvring space. The parking bay for the ambulance should allow for back access of wheelchairs and beds onto the ambulance.

Playgrounds and Exercise Area

Paving

Paving in playing areas can be in different colours, for example, use different colours of impact absorbing surfacing materials to indicate different functions, different areas and changes in level.

Different textures can also provide clues as to different areas of the playground.

Provide different play components in order to offer opportunities for children with various abilities to play together, encourage independence and offer a wide range of experiences and challenges.

Provide seats and shelters at reasonable intervals to give opportunities for opting out of activities. Adequate covered seating with back rest and arm rest should be considered for users and their companions or carers at appropriate locations for supervision.

Where tunnels and bridges are provided, they should be sturdy enough and wide enough to accommodate wheelchair users. Tunnels with sequences of solid walls, window openings and exit/entry places reflect sound differently and can give clues to location, so Appropriate transfer platform should be provided to allow children of different abilities to access different levels of modular play equipment. Adequate handrails If a prime access to the equipment is the only route, adequate space for transfer and manoeuvring for Platforms, resting places and places to turn around should be provided. Different colours could be used on the floors of the platforms and railings at different levels to cue children about how far they

Water Sports Facilities

Swimming pools, lap pools, wading pools, diving pools used for scuba or general swimming, and whirlpools and Jacuzzis shall be accessible.

Accessibility to water facilities should be by means of any of the following:

• A sufficiently wide ramp with a slip resistant surface extending into the shallow end of the pool. Such ramps shall have a slope not exceeding 1:6. Best practices are to provide a ramp 1200mm wide with handrails on both sides and with a slope of 1:8.

• A lifting device such as a disable chair lift.

Outdoor Furniture

Outdoor furniture and features such as lighting pole, bollards, seating benches and freestanding signposts must be positioned to allow for unobstructed access routes.

Use colour or colour bands to make street furniture distinguishable from the background of the route.

Free standing objects mounted on posts should not overhang for more than 300mm and below 2000mm from ground level.

Provide protection to warn users, especially small children, the elderly and visually impaired if the headroom is reduced along the route. Where obstructions or outdoor furniture within a walking zone cannot be avoided, use a paved textured surface around the unavoidable obstacle.

Outdoor Furniture
The outdoor furniture should be installed away from the line of walk. It should be placed 1000mm in front of the obstruction and extending 300mm to the side. Tree grilles to a width of 1000mm can be used around trees. An obstacle-free route of minimum 1800mm in width should be retained. As a remedial measure, a colour band of 150mm deep, with its bottom edge 1500mm above ground level could be incorporated to any posts or columns or other obstructions within a route. The band should contrast in colour and luminance with remainder of the post or column.

Lighting posts:
Locate lighting pole outside the accessible route. If it is unavoidable that lighting poles have to be located within the accessible route, use a contrasting colour finish to the base of the pole up to 1500mm high or provide a colour band at about 1500mm above ground level.

Bollards:
Low-level bollards and chain-linked posts are hazardous. If bollards are to be used, they should be at least 1000mm high and should not be linked with chains. A colour and luminance contrast feature should be provided to bollards.

Bench seats:
Provide seating at regular intervals along accessible routes. They should be readily accessible to all users but do not obstruct access routes. Allow a minimum 2000mm in width if the benches are not set back from the access route. Seats at different heights should be considered for children's facilities. The seat level should be generally 430-485mm above ground.
They should be located in safe and well lit areas. Allow an area of 400mm in front of the seat. A tactile warning surface could be used when they form an obstruction.
The following requires attention:
• Provide a firm wheelchair parking area 900mm wide on both sides of seating.
• Seats should be provided with a back support and arm rests on both sides of the sitting position. The back support should extend to a point 450mm minimum above the seat.
• Use materials which do not significantly retain heat or cold.
• The surface of benches installed in areas exposed to weather should be slip-resistant and should not accumulate water.

Litter bins:
Litter bins should be of big opening for easy dropping of litter by one hand. The lower side of opening should not exceed the height of 1020mm from ground.

Doors and hardwares:
Sliding doors should be power-operated where possible. Sliding automatic doors with no guard rails are more convenient for wheelchair users and visually impaired people.
If an automatic door is used, then it should be opening and closing slowly and low-powered. Automatic doors shall not open to back check faster than 3 seconds and should require less than 66.6N to stop door movement. If a power-assisted door is used, its door opening force should be minimum and not exceeding 22N.

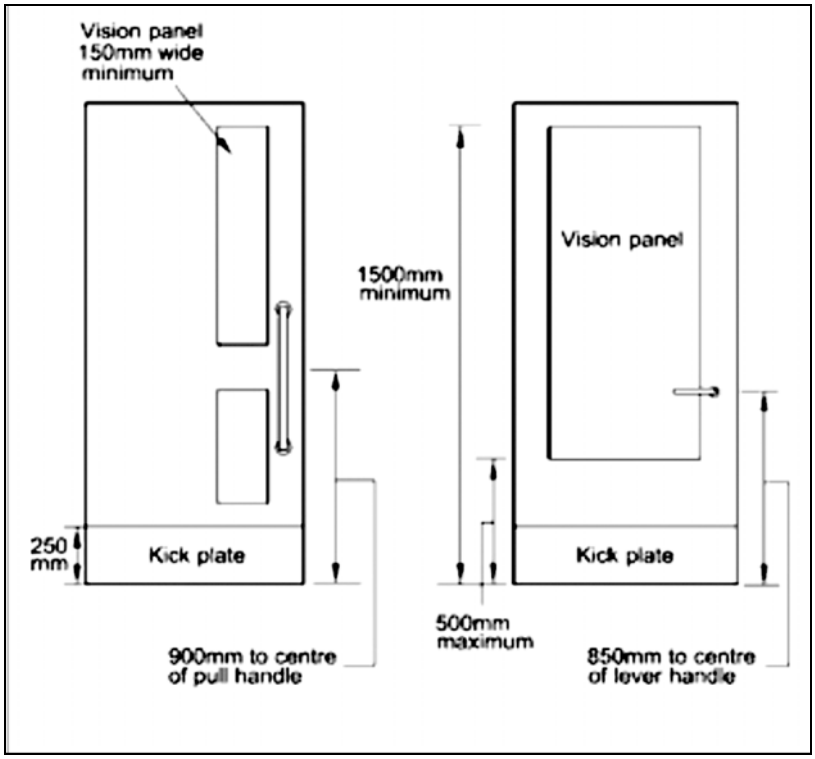
A vision panel of minimum width 150mm should be fitted to all doors to provide a viewing area, except where privacy is needed (for example, toilets, changing rooms or counselling rooms). The base of the vision panel should preferably be no higher than 500mm above floor level, and should extend to a minimum height of 1500mm. Beading around the vision panel should be flush

Doorways

Fully glazed doors should be highlighted with conspicuous permanent contrasting strips or continuous features. The leading edge of the door should be with colour and luminance contrast.

Handles, pulls, latches, locks, and other operating devices on accessible doors shall have a shape that is easy to grasp with one hand and does not require tight grasping, tight pinching, or twisting of the wrist to operate. Lever-operated mechanisms, push-type mechanisms, and U-shaped handles are acceptable designs. When sliding doors are fully open, operating hardware shall be exposed and usable from both sides.

If a door has a closer, then the sweep period of the closer shall be adjusted so that from an open position of 70 degrees, the door will take at least 3 seconds to move to a point 75mm from the latch, measured to the leading edge of the door.



Handrails

Handrails should be provided to all ramps, staircases and steps. They can also be used alongside with a tactile guide path, along corridors, as protective barriers and guard against hazards, and can be a directional guide to doorways or positions of signage. Where continuous handrail is necessary, for example, in elderly residence, or handrail is used as a means for way-finding by the visually impaired, the arrangement at openings such as doorways, service ducts, hose reels should be carefully considered to avoid conflict or breaking of the handrail.

The following items require attention:

• The entire component should be securely fixed to the building structure and conveniently located so they can provide secure hand grip for persons to take their entire weight when required. Handrails should not rotate within their fittings.
• Railing designs that allow children to climb must be avoided. Heights of handrails are preferably to be provided in pairs for adults and children, one at a height between 850 - 950mm and a lower one at a height between 450 – 500mm, measured vertically from the surface of the ramp or finished floor level to top of handrail.
• Handrails shall be continuous without interruption, except at doorways and openings, and with recessed brackets so that a hand can move from end to end without interruption.
• The gripping surface shall be free of any sharp or abrasive elements.
• The handrail material should be consistent throughout the entire length to avoid sending false messages to visually impaired persons due to change of material.
• Handrails may be located in a wall recess if the recess is of a maximum depth of 75mm and extends at least 450mm above the top of the rail.
• Handrails should be installed to resist a load of not less than 1.3kN applied vertically or horizontally.

Lifts and platform lifts

Passenger lift
Passenger lifts provide access between different levels and facilitate all users of the building to travel from one floor to another.
The obligatory requirements for barrier free provision of lift shall be in accordance with the regulations.

Lift car:
The minimum internal lift car dimensions should be 1100mm wide by 1400mm deep. A passenger lift with internal dimension of 2000mm by 1400mm and door opening of 900mm is recommended where possible.
Lift car that travels between two floor levels can be provided with opposing doors to allow the wheelchair user to travel in one direction.
The wheelchair user needs sufficient space and time to access the lift and an unobstructed area, say 1800mm by 1800mm should be considered in front of the lift.
Use non reflective wall and ceiling finish and slip resistant floor finish.

Control button and signal:
The provision of a large call button at foot level in the lift lobby is recommended for people with disabilities.
Clear audio and visual signalling and messages shall be provided. It is very useful to provide an extended door opening control button inside and outside the lift so that the opening time of the doors can be extended with a single press action for access by consecutive wheelchair users and elderly people. the staircase. Generally, people with a guide stick can detect an area of obstruction up to 685mm high from the ground level.

Escalators

Escalators are effective means of circulation, capable of moving large crowds continuously and efficiently, however escalators do not provide barrier free access routes. If escalators are used, the following best practices should be considered. An alternative accessible route, e.g. lift or ramp, should be provided nearby within sight from the position of the escalators. If the accessible route is not available within sight, appropriate signage should be provided to guide the users in need to the accessible route.

The recommended clear signals for going up/down for escalators should be provided if the environment and situation allow.
Tactile warning strips should be provided around the escalator pits both at the top and bottom of the escalator.
Sufficient illumination should be provided at the top and bottom of the escalators.
Sufficient clearance from any obstruction should be provided to any open side of the escalators.
Escalators should not be used to replace staircases when they are switched off, because the steps of the escalators are not negotiable by many users. If the escalator is installed in a place accessible by users at time when the escalator is not switched on, a lift (not locked) or a staircase should be provided in close proximity to the escalator.
The underside of an escalator where the headroom is 2000mm or less from the finished floor level, a guard rail or other form of barrier shall be provided to stop people from walking

Way Finding and Signage

Way finding and signage strategy

Way finding and signage strategies should include the following:
• **Information** about services and facilities;
• **Direction** to facilities and functional spaces, reception, advice, exits and key areas;
• **Identification** including room signs and room numbers, facilities and equipment, stair signs and floor numbers; and
• **Safety** notice such as warnings, prohibitions, hazards, fire exits and refuges.

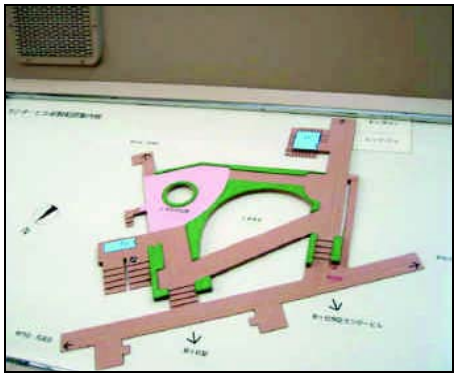
Words, pictorial signs and symbols should be used consistently within the same site and building.

Information
Facilities for persons with a disability should be clearly and consistently signposted at ramps, carparking spaces, entrances, toilets, baby caring facilities, lifts, reception areas, counters, accessible routes and exits externally and internally.

Such facility should be identified by international symbols of accessibility. Inaccessible routes shall have directional signage to indicate the route to the nearest accessible entrance.

Directory and floor plan
Identification and room signs

Directories and floor plans, where provided, should be located at the main entrance to a building, or in a designated place on the floor of entry, and at other strategic locations on different floors and levels.
Although they should be located at a prominent position, they should not obstruct the general pedestrian flow.
Bottom level of directories should be at a maximum height of 900mm from floor level. They may be free standing or wall mounted and with 'You are here' indicated. For free standing ones, they should ideally be slightly inclined from the horizontal, in line with the building's orientation.



Visual directory and map:
The directory should show the layout plans in simplified form indicating individual rooms, entrances and circulation areas, toilets and other accommodation.
Floor levels should be represented in graphical form and reflected in the directory. For good legibility, the information surface of the directory should be faced with non-reflective and glare resistant material.
Characters and symbols should contrast with their background.

Tactile map:
Tactile maps should be considered at major locations showing directions to the building. In buildings where finding locations independently on a routine basis is a necessity, tactile maps or prerecorded instructions containing information on locations of main entrances, toilets and other major facilities can be very helpful to visually impaired people.

Tactile borders:
Raised borders around signs containing raised characters may make them confusing to read unless the border is set far away from the characters. Raised borders and decorative elements that are not required should be separated 9.5mm minimum from tactile characters.

Identification and room signs
Many people with disabilities have limitations in movement of their heads and have reduced peripheral vision. Signage positioned perpendicular to the path of travel is easiest for them to notice. People can generally distinguish signage within an angle of 30 degrees to either side of the centerlines of their faces without moving their heads.

Room sign:
Signage indicating room names and room numbers should be placed on the wall next to the door on the door handle side or on the nearest adjacent wall. Characters shall be located at 1220mm minimum and 1525mm maximum above floor level measured to the baseline of the characters. A small embossed arrow should be used to indicate direction. Braille should be located 1015mm minimum and 1525mm maximum above the floor measured from the baseline of the Braille cells.

Room tactile sign:

Where a tactile sign is provided at double doors, the sign should be located to the right of the right hand door. Where there is no wall space at the latch side of a single door or to the right side of double doors, signs should be located on the nearest adjacent wall.
The mounting location for signs containing tactile characters should allow a person to approach within 75mm of the sign without encountering protruding objects or standing within the swing of a door.

Colour:
Signage, and symbols within signs, should have colour and luminance contrasted with their background. The greatest readability is usually achieved through the use of light-colored characters or symbols on a dark background.

Safety
Fire exits signs, fire escape plans, sign of emergency alarm and warning signs on hazards should be provided for the users.

Illumination and colour contrast

Illumination on signage:
Signage should be well lit. Illumination levels on the sign surface should be in the range of 100 to 300 lux and shall be uniform over the sign surface. Signs shall be located such that the illumination level on the surface of the sign is not significantly exceeded by the ambient light or visible bright lightings

Tactile Surfaces

Tactile on walking surfaces
Tactile surfaces are used for guidance paths, information and warning to openings and edges for the visually impaired.
There are three types of tactile surfaces that are commonly used to guide and alert people.

Directional tile:
It consists of raised parallel bars to guide people along the direction of a tactile path.

Warning tile:
It consists of raised truncated domes arranged in square grid parallel to the sides of the tile to alert people of potential hazards such as top and bottom of stairs, door openings and at pedestrian crossings.

Positional tile:
It consists of raised small dots arranged in staggered positions to indicate change of walking direction.
The obligatory requirements and guidelines for tactile path and tactile arrangements shall be in accordance with the existing regulations.

Use of tactile surfaces
In designing an access to a facility or building, the selection of floor materials may be different for exterior or interior environment. In all cases, it is important to bear in mind that the tactile surfaces should be firm and slip resistant. Broken tiles or incorrectly laid tiles give wrong information to the user and become an obstacle. Tactile surfaces should be in colour and luminous contrast with adjoining surfaces, either light-on-dark, or dark-on-light. The material used to provide contrast should be an integral part of the walking surface.

Assistive Listening Systems

The hearing problem
A hearing-impaired person has to hear the signal, with or without hearing aids, in order to understand it and loudness is just one part of the listening equation. For most people with hearing loss, the comprehension of verbal messages takes more than audibility. Their comprehension also depends upon the nature of their hearing losses.
The most common problem in hearing which affects older persons in particular is that hearing acuity is poorer at the higher frequencies than at the lower ones. The acoustic characteristics of speech that allow listeners to distinguish between speech sounds occur largely in the higher frequencies.
The common complaint of people with hearing loss is that they can "hear" the low frequency components of speech signals and know someone is talking, but they cannot "understand" because many of the important higher frequencies are filtered out by their hearing loss. The sound signals which traverse acoustical space before arriving at a listener are weakened by proportion to the travel distance and distorted by background noise reverberation and other acoustical conditions before reaching the listeners. The situation will not be improved just by increasing loudness.
The approach is to take appropriate steps so that communications with people with disabilities are as effective as with the general public. Assistive listening systems are useful for effective communication with the hearing impaired. With such auxiliary aids, a hearing impaired person can enjoy equal opportunity to the benefits of an activity, a service, or a programme. User requirements are the prime consideration in determining what type of assistive listening system would be appropriate for a venue.

Types of listening systems
There are two types of listening systems, namely

- public address system and
- assistive listening system.

Public Address (PA) System:
The PA System utilizes the loudspeaker(s) to transmit sound signals to the listener. In buildings to be used by the public, the visual display boards should also display relevant information announced by the PA system. An example is the train schedule information.

Assistive Listening Systems (ALS):
ALS are devices used in venues such as theatres, auditorium, convention centres, courtrooms, museum to help people with hearing loss to improve their auditory access in difficult and large-areas. A free standing ALS can be used to back up the existing PA system but it is not a substitute for PA system. It can also be used to improve functional hearing abilities with or without the person wearing hearing aids.

Types of listening systems
ALS are intended to augment standard public address and audio systems by providing signals which can be received directly by persons with special receivers or their own hearing aids and which eliminate or filter background noise. The type of assistive listening system appropriate for a particular application depends on the characteristics of the setting, the nature of the program, and the intended audience.

Three types of ALS are listed below:-
• Magnetic Induction Loop (IL) systems use a wire around the room to transmit an electromagnetic signal that is picked up by a small telecoil in the hearing aid. Users simply switch on the telecoil (the "T" setting) and adjust the volume of the hearing aid. However, telecoils (mainly used for improved telephone access) are found in about thirty percent of current hearing aids. For those people whose hearing aids contain telecoils, an IL system is very convenient as the special "receiver" is their own hearing aids.
• FM (Radio Frequency) systems are variations on the commercial FM radio. Radio signals are broadcast by an FM transmitter backed on the sound system used in the facility. These signals are received by individual "radios" - small pocketsize receivers tuned to the specific frequency used in the transmission.
• Infrared (IR) systems operate on infrared light that is beamed from one or several IR transmitters to small, specialized receivers. There are several types of IR receivers such as stethoscope-style that dangle from the ears, a headset type that fits over the ears, and a small pocket-size type similar to the FM receiver. The receiver-to-ear connections for the first two types are straightforward as they are placed directly in or at the ear. The receiver-to-ear connections with the pocket-style are the same as FM receivers.

Installation of ALS
Each ALS has its advantages and disadvantages. A system that works well in a courtroom may not be appropriate for a theatre. An outdoor facility needs a different system from that of an orchestra hall. Differences in requirements such as privacy, interference, cost, installation requirements may result in installation of different type of ALS in a venue. A site analysis and operation assessment is required before deciding which system would be the most appropriate ALS for the venue. Some of the aspects that should be considered are listed below:-
• If privacy is a major consideration and the events taking place should be excluded to people outside the room, then an IR system should be employed.
• If a large number of simultaneous events are to be taking place in adjoining facilities and there are a sufficient number of potential FM carrier frequencies considerations include the provision of FM receivers that can be tuned to all the possible frequencies.

• If it is necessary to use the system alternately in a number of different activity rooms such as in a community centre, then FM systems are more flexible and can be used both indoors and outdoors. However, some IR systems are also relatively easy to deploy, and portable units work well in smaller activity rooms, although they are less effective outdoors.
• If the facility is very large such as the case of a massive auditorium with balconies and overhangs, it is easier to provide an appropriate signal at all seat locations with an FM system although an IR system in such location can be considered.
• If the facility is likely to be subjected to persistent interference, then an IR system may be the best choice. It is possible to use a frequency scanner to determine the possibility of interference.
It is recommended that professional advice, preferably one with experience in installing ALS's should be obtained for major facilities, particularly the large spaces as plenaries, etc.

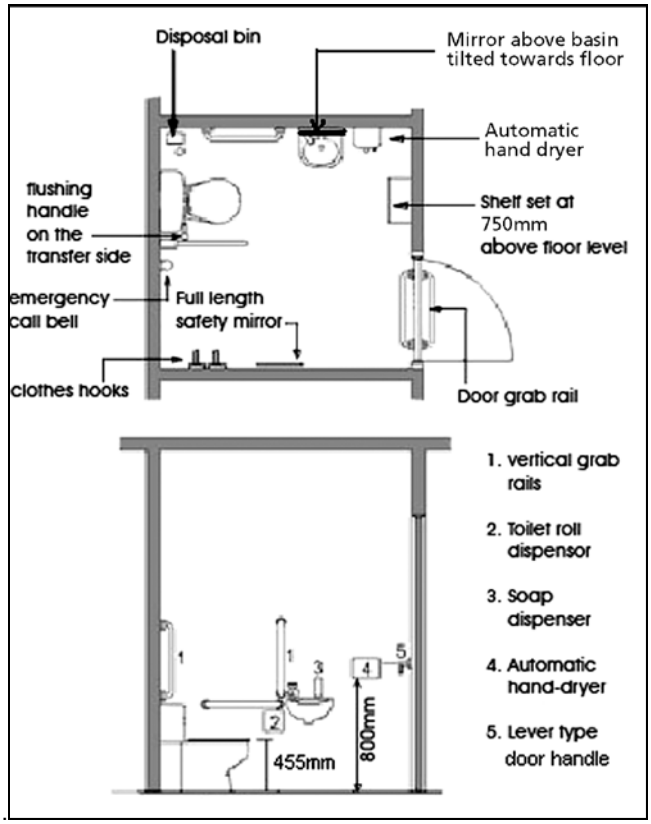
Management of ALS
Some of the common problems that are encountered with the system:-
• Staff are unfamiliar with using the system or do not know how to demonstrate it.
• The batteries in the receiver are either dead or weak.
• The receiver/ear connection is not suitable or incompatible for the user.
• The equipment is of poor quality and could not provide the acceptable standard.
• The ALS was not installed properly or maintenance is required.
Proper maintenance of the system and training of staff are important. Information regarding availability of the system and receivers should be located in a conspicuous location or can be obtained at an information counter or the box office. It is necessary to consider storage space

Toilets

The size of a toilet room should best be 2000mm x 2000mm. This will provide options for positioning the toilet pan. A clear unobstructed approach should be provided to the toilet, wash hand basin and hand dryer. The toilet door should open outwards to provide a clear opening of at least 900mm and should include a horizontal handle. For privacy and safety, avoid the toilet door opening directly onto a public and/or circulation area.

Flushing control:
Sensor controlled flushing systems are preferred. Other options such as a lever flushing handle on the transfer side of the toilet is acceptable.

Wash hand basin:
A small wash-hand basin should be installed at a height not more than 750mm and it should allow for knee clearance height of 550mm under the basin. A tap with a lever handle should be provided, with the tap fixed on the side of the basin nearest to the toilet pan. A mirror above the basin is recommended, with its bottom edge at a maximum height of 1020mm from the floor and a minimum top height of 1880mm. It should be slightly tilted towards the floor for use by wheelchair users



Materials:
The flooring material should be slip resistant. All fittings and the door should contrast in colour and luminance with the walls and floors. Colour contrast in fittings is useful for the elderly.

Ancillary fittings:
A counterbalanced single bar hinged support rail should be provided. All support fixings should be designed to withstand an ultimate load of 15kN. The door fastening mechanism should be of the lever type with an integral lock which is operable from the outside in case of an emergency. It should incorporate an 'engaged' indicator.
A soap dispenser should be sited over the washhand basin and should be operable with minimum pressure.
A hot air hand dryer or towel dispenser should be installed adjacent to the wash-hand basin at a height of 800mm above floor level. Small toilet roll dispensers are preferred and should be fitted at least 600mm above floor level. Larger dispensers should be positioned 150mm above the grab rail. High and low level coat hooks should be fitted at 1200mm and 1800mm above floor level. A full length safety mirror should be fitted, set at maximum 300mm above floor level.
A small shelf should be fitted, set at 750mm above floor

Water closet and WC stall cubicle
Water closet:
Generally the height of the water closet pan should be 455mm and the front of the pan should be 750mm from the rear wall.

Height preferences for toilet seats vary considerably among people with disabilities. Higher seat heights may be an advantage to some ambulatory people with disabilities, but are often a disadvantage for wheelchair users and others. Toilet seats 455mm high can be a reasonable compromise. In suites of toilets, different levels of pans, including one at a lower height, may be considered.

Grab bars:
Vertical and horizontal grab bars, and folding bar cum arm rest mounted on wall should be securely fixed to take the full weight of an adult. Folding bar provides additional support to assist in standing up and transfer after using the closet. Grab bars shall not rotate within their fittings.

Back rest:
Back supports should be provided to closets. This can be in the form of a seat lid or an independent fixed cushion.

Clear floor space:
Clear floor space may be arranged to allow either a left-handed or right-handed approach. For a front transfer to the water closet, the minimum clear floor space at the water closet is 1220mm in width by 1680mm in length. The minimum clear floor space is a 1220mm (width) by 1420mm (length) for a diagonal transfer to the water closet. For a side transfer to the water closet, the minimum clear floor space is 1530mm (W) by 1420mm (L).

Flush controls:
A toilet seat lid can be provided if flushing valve plumbing fittings are directly behind the toilet seat. Such design reduces the chance of injury and imbalance caused by leaning back against the fittings.

WC stall cubicle:
Suites of male/female toilets should include at least one larger sized cubicle wherever feasible, minimum 1200mm wide, with grab bars. Adult and child size fittings in a cubicle are useful. Toilet stalls with a minimum depth of 1420mm and minimum width of 1525mm shall have wall-mounted water closets. If the depth of a standard toilet stall is increased to 1500mm, then a floor-mounted water closet can be used.
Door location should be in front of the clear space with a maximum stile width of 100mm or alternate door location can be on the side of the stall with a 100mm maximum stile width. Centreline of the water closet shall be 450mm from the side wall. In 1420mm deep stalls, a toe clearance of at least 230mm above the floor at the front partition and at least one side partition is needed. Toe clearance is not required if stall depth is greater than 1525mm.

Urinals
Urinals shall be stall-type or wall-hung with an elongated rim at a maximum of 380mm above the finish floor. Urinal stalls mounted on the floor provide guidance to the visually impaired as they can tap the stall to get the position. A clear floor space 760mm by 1220mm shall be provided in front of urinals to allow forward approach. This clear space shall adjoin or overlap an accessible route.
Flush controls shall be automatic. Hand operated controls shall be mounted at 1120mm above the finish floor.
Persons with disabilities who use mobility aids such as guiding sticks or crutches prefer to use two parallel grab bars to achieve a standing position. At least one urinal in a toilet should be equipped with a breast bar for supporting persons with disabilities and elder people.

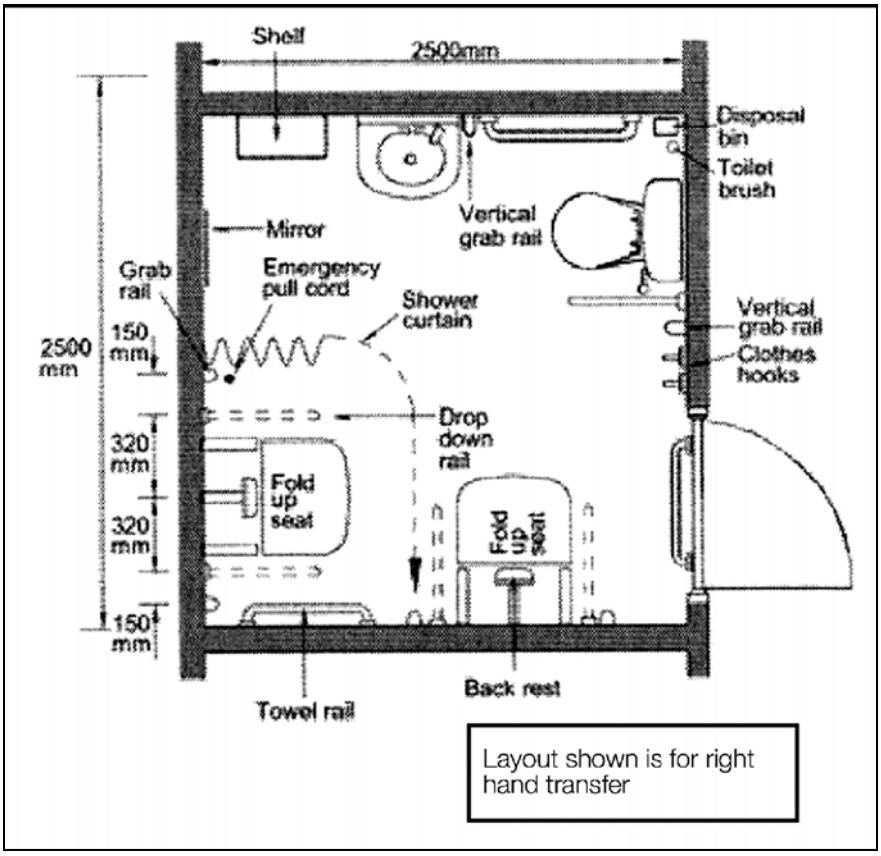
Lavatory basin
Lavatory basins should be mounted with the counter or rim not higher than 750mm from the floor, and with shallow depth for use by all, including wheelchair users and the elderly. The taps should be installed at the side of basin closer to the counter edge for easy reach by a child. Where high and low level basins are provided for adult and child use, the higher basin should not be more than 865mm above the floor level. The basin bowl should be a maximum of 165mm deep. A clear floor space at least 7 50mm by 1200mm shall be provided in front of a basin to allow forward approach. Knee clearance under basins is required. Hot water and drain pipes exposed under sinks shall be insulated or protected against contact. There shall be no sharp or abrasive surfaces under Faucet controls shall be operable with one hand and shall not require tight grasping, pinching, or twisting of the wrist. The force required to activate controls shall be no greater than 22N. Lever-operated, touchtype, or electronically controlled mechanisms are acceptable designs.

Shower room and bathroom
The layout and fittings used for showers and bathrooms should aim to allow washing and bathing independently. Where it is not possible to design for specific individual requirements, showers and bathrooms should be designed to allow for the widest range of users.

Accessible shower:
A shower room should have a minimum floor dimension of 2500mm by 2500mm and should include a WC and a wash hand basin. It should have:
• A wet area with a flat permeable surface.
• A shower curtain that surrounds the seat and rails, which is operable from the shower seat.
• An easily adjustable shower seat in the wet area at a maximum height of 480mm above floor level.
• A minimum depth of 430mm and be self-draining.
• An easily adjustable portable shower spray with flexible hose of 1525mm long and with a rise and fall fitting for adjusting the shower spray to different positions or used as hand-held fitting.
• A thermostatically controlled shower stream by lever controls set at 900mm above floor level.
• Recessed soap holders fitted at 650mm and 900mm above floor level.
• Horizontal and vertical grab rails provided positioned at 750mm above floor level.

Wash hand basin with knee space at the elderly residence

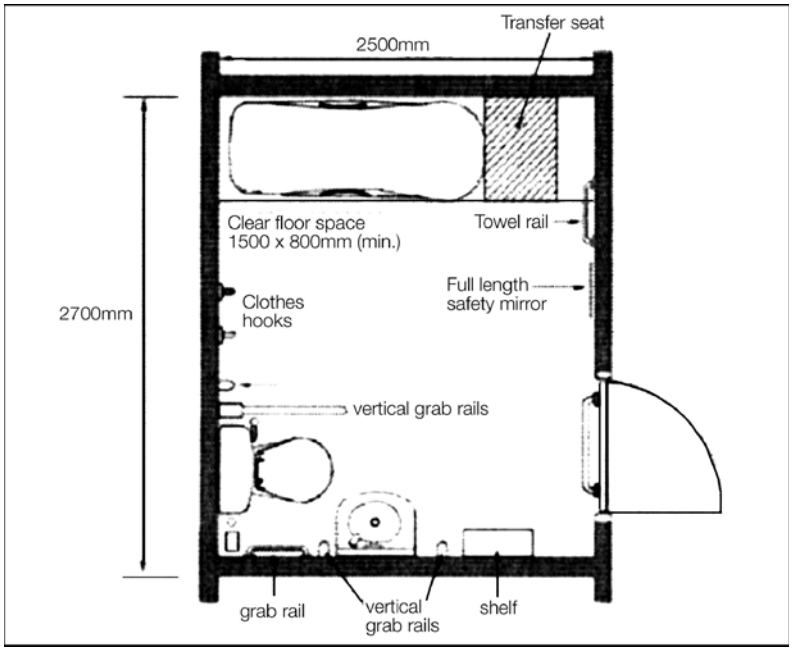
Typical shower room layout



Accessible bathroom:
A bathroom should have a minimum floor dimension of 2500mm x 2700mm and should include a WC and a wash hand basin
It should have:
• A bath board available for use.
• A thermostatically controlled mixer tap with a lever handle control.
• An in-tub seat or a seat at the head end of the tub. Seats shall be mounted securely.
• A bathtub enclosure that does not obstruct controls or transfer from wheelchairs onto bathtub seats or into tubs. Enclosures on bathtubs shall not have tracks mounted on their rims.
• Faucets and other control mechanisms conveniently located which shall be operable with one hand without requiring tight grasping, pinching, or twisting of the wrist. The force required to activate controls shall be no greater than 22N.

Floor space at bathroom:
With seat in the bathtub, a clear floor space of minimum 1500mm by 800mm is required alongside the bathtub. If the approach is perpendicular to the bathtub, a 1220mm minimum width by 1525mm minimum length clear space is required. With seat at the head of tub, a clear space of 760mm minimum width by 1910mm minimum length is

required if the approach is parallel to the bathtub. The seat width must be 380mm and must extend the full width of the bathtub.



Ancillary fittings and fixtures
Mirrors:
If mirrors are to be used by both ambulatory people

Baby care table set against wall
Baby seater inside toilet cubicle. Titled mirror is useful for wheelchair users 1880mm high at their topmost edge. A single full length mirror can accommodate all people, including children. Mirrors shall be mounted with the bottom edge of the reflecting surface no higher than 1020mm above the finish floor.
Clear floor space for a forward approach 760mm by 1220mm should be provided in front of full length mirrors. Doors should not swing into this clear floor space.
Mirrors for children should be mounted with the bottom edge not higher than 865mm above the finish floor or at the lowest mounting height permitted by fixtures and related elements.

Accessible windows

Windows in buildings are essential for ventilation and weather shielding purposes. As such, they should be accessible by the users in order to perform their function. The most common window types in Hong Kong include casement, top hung and sliding and they require a pushing or pulling force to open or close. Windows should not require a force more than 22.2N to operate. It is recommended that all window locks and controls should preferably be operable with one hand and shall not require tight grasping or twisting of the wrist.

Fixed Seating Venues

Accessibility to fixed seating venues

Fixed seating venues refer to places where permanent seating arrangement for audience are provided such as theatres, auditoriums, lecture halls, conference rooms, arenas and stadiums. Free access to the seating area as well as back of stage facilities should be provided. The use of removable or folding seats will facilitate flexible arrangement of accessible spaces inside the fixed seating venue. Access to ancillary facilities such as toilets, changing and rehearsal rooms, information and signage, low level lights, assistive listening systems are essential.

Accessible route

All major levels within the fixed seating venues shall be accessible and linked up by ramps.

Accessible route also serves as a means of escape in case of emergency and the layout of accessible spaces inside the fixed seating venue should not cause any obstruction to the accessible route.

Provide an accessible route from the wheelchair seating locations to the stage and performing area where access is provided to the stage from within the fixed seating venue. In addition, an accessible route that coincides with the route for performers should be provided to the backstage area. Access to the stage should be by means of a ramp or a platform lift.

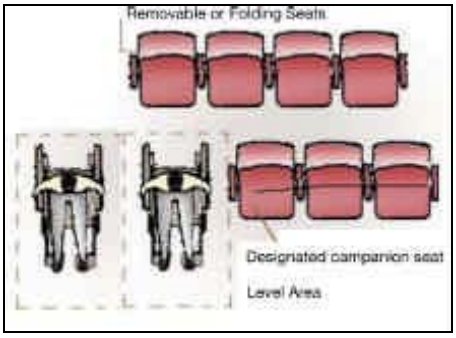
Accessible route should be continuous at all major levels and lead to essential facilities such as toilets and refreshment area. Provide two to three pairs of entrance doors at each major access point to cater for the large amount of audience. The door opening width should allow the wheelchair users to pass through comfortably. Doors equipped with light touch opening device and delay

Accessible space is one that people in wheelchair can use and it is linked by an accessible route. A minimum number of accessible spaces for wheelchair users shall be provided and shall be computed in accordance with the regulations.

Wheelchair spaces shall be an integral part of any fixed seating plan. Each wheelchair space should be 500mm wide and 900mm deep on level ground. The sight line for wheelchair users should be comparable to other users. Safety barrier should be provided to wheelchair spaces located at high level to minimize the risk of the wheelchair falling over the edge.

Best practice is to use readily removable or retractable seat so that the spaces can be easily arranged. Provide accessible space with companion seating arrangement. Provide space for wheelchair user at outdoor area. Use removable seats to accommodate different users.

Provide at least one companion fixed seat or portable seat next to each wheelchair seating space for designated use by a companion. Companion seats should be comparable to the seats for the general public. Place a label on the seat to indicate that the areas are reserved as companion seating. Where more than 150 seats are provided, wheelchair spaces should be provided in more than one location. Dispersed wheelchair seating locations throughout the seating areas are desirable so as to provide a choice of admission prices and views comparable to those for the general public. Provide two or more aisle seats with no armrests on the aisle side, or with removable or folding armrests on the aisle side for the ambulant user with disabilities. Identify such seat with a sign on the seat. Flexible seating layouts are feasible by means of removable seats and steps that can be sunken into the space below to make the area accessible to wheelchair users.



Accessible toilets:
Accessible toilets and its associated facilities shall be provided on the same floor/level of the accessible seats.

Information and signage:
Visual signs as well as Braille signs should be provided in conspicuous locations.
Provide seating plan showing the seating arrangement with clear indication of wheelchair space, exit route and other facilities. The seating plan should be provided adjacent to major door entrances. Braille fire exit plan should be provided. Braille seat numbers should be provided at the top of each seat rest.

Low level lighting:
Provide sufficient low-level lights along the access routes and under the seats.

Assistive listening systems:
Provide permanently installed assistive listening system, or other supplementary wiring necessary to support a portable assistive listening system.

Other Facilities : Public Counters, Public Telephones & Drinking Fountains

Public Counters - Service/Information Counters:
Counters should be provided with an upper writing surface for users in the standing position at 900mm high as well as a lower counter top with a maximum height of 750mm and knee space should be provided for wheelchair users. If feasible, the length of the lower counter top is recommended to be 900mm although the minimum requirement is 750mm. Space in front of the information counter should be provided for

queuing and waiting. Design counter top with a notch or other detail to hold walking sticks or umbrellas

Signage:
Provide clear signage at conspicuous position to indicate the location of the information counter and other signage regarding services that is available at the counter, such as the assistive listening system.

Service counter with security glazing:
Where security glazing is used to separate personnel from the public, voice communication facilities should be provided. Examples of communication methods include:
• grilles
• slats
• talk-through baffles
• intercoms
• telephone handset devices, at least one shall be equipped with volume control
The method of communication shall be accessible to both wheelchair users and those who have difficulty bending.

Public Telephones
Public telephones should be accessible to all users. Telephone provision should cater for the needs of wheelchair users, as well as the visually and the hearing impaired. Best practices are to provide a clear floor space at least 750mm by 1200mm and for wheelchair users. If the phone is installed inside a booth, a clear space of 900mm wide should be provided for people with disabilities or walking aid. Telephone should have push button controls with a dot in digit 5 as the indicator for use by the visually impaired. Other useful phone features include inductive device and amplifier for the hearing impaired; touch screen and text message for the speech impaired. Fittings like grab rails, foldable or movable seat should also be considered.
Recommendations for (i) Forward Reach Telephones and (ii) Side Reach Telephones are as follows:

Mounting height:
The highest operable part of the telephone is recommended at 1200mm maximum for forward reach telephones and 1350mm maximum for side reach telephones.

Enclosure walls:
The base, enclosures, and fixed seats shall not impede approaches to either forward reach or side reach telephones. The enclosure wall is recommended at maximum 600mm beyond the face of the telephone for forward reach telephones and 250mm for side reach telephones.

Enclosure shelf:
The shelf within enclosure walls should be maximum 500mm beyond the face of telephone for forward reach telephones and 250mm for side reach telephones.

Drinking Fountains
Provide low level protruding type drinking fountains for wheelchair users. Best practice is to provide two drinking fountains mounted side by side at high and low levels, to cater for needs of all users including people with disabilities, or children and people who find it difficult to bend over.

Spout Location and Control:
Drinking fountains should have spouts positioned at the front of the unit. The spout shall direct the water flow in a path almost parallel to the front of the unit. Flow of water should be at least 100mm high so as to allow the insertion of a cup or glass under the flow of water.
For drinking fountain having a round or oval bowl, the spout must be positioned so the flow of water is within 75mm of the front edge of the fountain. Provide drinking fountains for users of different needs wheelchair users, spouts not higher than 800mm from the floor is recommended.
Controls shall be front mounted or side mounted near the front edge and easily operated with one hand. Best practices are to provide a clear floor space at least 750mm by 1200mm for wheelchair users. Knee space and toe space should be provided underneath the fountain. A toe space of minimum 230mm from the floor and knee space of 700mm from the floor to the underside of fountain are required. Signage should be provided to indicate the location of drinking fountains. Place both the spout and the control near the front. Provide a clear space in front of drinking fountains

Lighting and Illumination
Use of Lighting
Lighting is the key element in defining the shape of spaces and helps with orientation.
Entrance areas, foyers and lobbies should be used as transition areas to enable people to adjust to changes in lighting levels from outside to inside and vice versa, and to lighting levels within different parts of a building. In public buildings, electronic monitoring of lighting levels inside and outside should be considered. Light fittings should be positioned above 2000mm from ground or floor level in accessible pathways. Uplighters should not be used at street or floor level where they will cause obstruction. Light fittings should be positioned where they do not cause glare, reflection, shadows or pools of light and dark. The illumination level is much affected by where the fittings are located. For example, if the light fittings are located near one side of the corridor wall, the illumination level on the opposite wall may be inadequate. The situation may be worsen if there are other services running along the corridor blocking the light source.

Light colours for walls and ceilings will help to reflect and diffuse the light. Large areas of loss finish on walls or ceilings are not desirable. Colour and luminous contrast is essential for differentiating an object with its background and detecting level difference. The use of lighting can improve colour contrast difference between stair treads and risers. Illumination from above the stairs to provide higher illumination to the tread surface to contrast with the riser surface is preferred. Lighting should also be used to provide better contrast between countertops and front edges or cabinet.
Use lamps with good colour rendering properties where appropriate, for example, use 'daylight' lamps. Fluorescent light fittings should be screened, maintained to avoid flicker, and located to avoid interference with hearing enhancement systems. All lighting systems should be compatible with hearing enhancement and radio frequency systems.

Switches, sockets and controls
To facilitate the widest range of users, including the elderly and people in wheelchairs to reach the switches and sockets, the positioning of switches and controls has to be within their reach.
Best practices are as follows:
- Light switches at 1100mm to 1200mm high, and thermostats 1200mm maximum height.
- Electrical sockets at 450mm to 500mm high from floor level.
- Electrical panel with top not more than 1400mm above floor level with a minimum 760mm x 1200mm clear floor space in front. Switches or sockets with colour and luminous contrast from surrounding finishes and walls should be provided.
- Large button type switches, easy-touch rocker or hands-free motion detector light switches should be considered.
- Remote controls are desirable for selected lights, heating and cooling.
- Doorbell intercoms connecting to portable telephones are desirable.
- Audible and visual alarms for doorbell, baby monitor, and smoke detectors should be considered

Maintenance and Review

Managing Accessibility
Design for All concepts do not stop when the building is completed. The operator will procure special furniture and equipment or carry out specialist fitting-out works after the completion of main building works. Early dialogue between the designer, operator and maintenance agent to implement and maintain Design for All items would facilitate a holistic approach, avoid abortive work and conflicting spatial requirements. The process of Design for All is an on-going one throughout the life span of the building. Managing and maintaining facilities and services require planning, monitoring and review. The building plans, together with information on facilities for the different user groups, access and evacuation plans are important documents for reference and review. It is a good practice to include information such as accessible car park spaces, tactile path, toilets for users with disabilities, refuse space, detectable warnings and call bells etc. into the maintenance plan and user manual. In the planning of relocation of work stations, furniture and equipment, display panels and maintenance work, the management should bear in mind that accessible path and facilities should not be obstructed. Where accessible facilities have to be temporarily closed for repairs, alternative facilities should be provided and clearly sign posted.
The operator and the maintenance agency should work out contingency measures such as:
• Arrange for accommodation that is required for the use of the persons with a disability or the elderly to be positioned on other accessible parts of the building;
• Arrange for temporary accessible toilets suitable for use by persons with a disability or the elderly;

• Arrange for emergency assistance and helpers to cater for the need of any person, including helping them to gain access to facilities.

Apart from the regular maintenance items in the maintenance plan, the followings items require attention:
• Keep car parking space(s) for the people with disabilities and access unobstructed.
• Keep accessible paths, ramps and steps clean and unobstructed.
• Maintain and update directory signs to facilities and keep signage unobstructed.
• Keep spaces required for wheelchair manoeuvring and tactile paths unobstructed.
• Keep proper use of accessible/ toilets for users with disabilities and do not used them for other purpose.
• Maintain access routes and wheelchair spaces in all seating areas.
• Keep emergency pull cords in working order and not tied up after cleaning.
• Inspect and repair tactile surfaces and floor coverings.
• Maintain colour schemes, textures and finishes of materials to comply with statutory requirements and best practices.

It is also important to maintain and test provisions:
• Maintain and test listening systems e.g. induction loop system and remote signage system.
• Maintain and check facilities for people with disabilities such as lifts and platform lifts.

Training and updating are also required:-
• Review and provide emergency procedures so that services can be provided in case of facilities breakdown and/or repairs e.g. lifts, call bell in toilets for people with disabilities.
• Review emergency evacuation plans for all visitors and staff and check that emergency assembly areas are unobstructed.
• Provide training to staff and update on disability and equality aspects for all staff.
The frequency of the reviews and enforcement procedures depends on the usage rate of the facilities.

Review and Improve
An audit on the existing provisions should be conducted prior to planning of addition and alterations works. This is particularly important for historical buildings. Major addition and alteration works provide an opportunity to improve and upgrade the accessible facilities in the existing premises. However, the planning of additional facilities within the existing premises should not take away accessible facilities already provided unless the same or enhanced facilities can be provided in the improvement works.
The maintenance aspect and ease of use of the fixtures, fittings and features are factors for consideration when improvement works are planned. For example, in considering the provision of a ramp or a platform lift, apart from ease of access and installation, spatial constraint, the recurrent cost to Furthermore, as new technology and materials become available in the market, more options for accessibility could be considered.

PART II
EMPLOYMENT FOR ALL

As people with disabilities enter in greater numbers into competitive employment, it has become clear that they can be excellent employees, an asset to their employers, if they work in jobs matched to their skills, abilities and interests. Many employers of people with disabilities are testifying to this all round the world. Other employers are willing to recruit workers with disabilities, but need support in this, as they may be unsure of what jobs to offer. Job and work analysis can be useful in identifying suitable jobs within the enterprise, and adjustments and accommodations which may need to be carried out, and in making it easier to match the skills and abilities of the job seekers with disabilities with the requirements of the job.

Intro

Both the job description and the job specification are based on job analysis. Without good quality **job analysis** the description of job opportunities will be vague rather than precise, general rather than specific, broad rather than detailed. As a result, people with disabilities will be further disadvantaged in finding suitable jobs. When there is a vague job specification – or no job specification at all - it is very hard for people with disabilities to be placed in meaningful, productive and decent work.

This is not to suggest that job analysis should be motivated solely by the needs of people with disabilities. Job analysis is about tasks, not individual job seekers. It

WHO CAN DO JOB AND WORK ANALYSIS?

You do not need any formal qualifications to use work and job analysis to assist people with disabilities find suitable jobs. An understanding of work study, time and motion study, vocational assessment techniques and personnel management would be useful but is not essential. Every placement officer, whether employed in the public, private or NGO sector, can develop the necessary knowledge and skills.

To be successful at job and work analysis you should develop:

- a broad knowledge of how labour markets function
- a knowledge of the job matching process. This includes having the skills and techniques to assess the needs and requirements of enterprises as well as the needs and capacities of job seekers
- a knowledge of disability issues and a good awareness of the needs of people with disabilities, both as people and as job seekers
- a knowledge of what adaptations and aids are available or possible to support people with disabilities in their jobs
- the ability to interact with people in a wide variety of situations
- the ability to think logically and observe critically
- a belief that service to others is important.

The steps outlined in these guidelines will get you started in both work and job analysis. You probably follow some of these steps already. You do not have to be an economist, an accountant, a psychologist, a medical doctor, a lawyer or an occupational nurse to do job and work analysis.

Any placement officer with intelligence and motivation can do it. You just need the capacity to:

- conduct structured interviews
- ask relevant questions
- listen attentively
- observe carefully
- record information systematically.

Give work and job analysis a try. It is not as complex as you might think.

KNOWING THE LABOUR MARKET

As a placement officer you need to be aware of the labour market situation in the area you are serving. In order to assist people with disabilities to find suitable jobs and to assist enterprises to find suitable workers, you will need to do some simple research. Answers to the following questions will provide you with important information concerning the needs of enterprises and their demand for workers, and the supply of workers available to fill those jobs:

- What are the main industries in this area? Within these industries, which are the main enterprises?
- What proportion of the workforce in this area is engaged in wage employment?
- What proportion of the workforce is engaged in self-employment and informal sector activities? What are the main activities (e.g. agriculture, fishing, food services, processing, and transportation)?
- How long have the main enterprises been operating in this area? Are they expected to stay in the longer term?
- Which enterprises appear to be growing? Which are contracting?
- What new enterprises are expected to come to this area in future? What products or services will they produce? What types of workers will they need?
- What is the general skill profile of workers in this area? Are they highly skilled, skilled or unskilled?
- What training providers, both public and private, mainstream and specialized, exist in this area? What training do they provide?

How many people, people with and without disabilities, do they train each year and in what subjects?

- Do the graduates of training institutions find jobs? What jobs? In which industries and enterprises?
- How many people with disabilities in this area are willing and able to work? How many are currently working?
- What is the skills profile of job seekers with disabilities in this area?
- Which enterprises have hired people with disabilities? What jobs? What types of disability do these workers have? How many have been employed?

Much of this information will be available from existing sources. You need to bring it together and then **analyse** it to identify:

- which enterprises offer the best prospects for employing people with disabilities
- which people with disabilities might be placed in wage employment
- which people with disabilities might be facilitated to take up self-employment.

Up-to-date, relevant, accurate information on your local labour markets will provide the basis for focused interventions to ensure more people with disabilities are placed in meaningful employment. This information can also identify those enterprises that may be willing

WHAT IS JOB AND WORK ANALYSIS?

Job Analysis refers to a detailed and systematic process of breaking down work performed into a number of separate tasks and duties.

It is a detailed process in that it considers all tasks to be performed, sometimes dividing them between main tasks and secondary tasks. It is a systematic process in that it follows a step-by-step approach to collect, record, analyse and interpret the information collected.

Work analysis is related to job analysis but is wider in scope. Job analysis involves looking at an individual job to identify the individual tasks involved. Work analysis involves looking at several or, indeed, many jobs at the same time. Like job analysis, work analysis is both detailed and systematic. The outcome, however, is different. Job analysis identifies tasks and duties, whereas work analysis identifies potential new jobs and a need to reorganize and restructure.

Chapter here explains what is involved in work analysis and how to do it. In order to understand what **job analysis** is it is necessary to make a clear distinction between:
- an occupation
- a position
- a job.

Occupation
An occupation is a group of jobs that are reasonably similar with regard to the tasks performed and the knowledge, skills and abilities required to perform them successfully. Examples include primary teacher, computer programmer, civil engineer, accountant, nurse, sales person, airline pilot, secretary and security guard.

Position
A position (or post) refers to the level of a job within an organization or enterprise. This is usually shown by the title of the position. For example:
- Clerical Assistant, Grade 2
- Professional Officer, Level 3
- Assistant Sales Manager
- Senior Technical Officer, Level 1
- Employment Officer.

These titles say very little about the actual job or work to be performed. Every job has a position or title, but for one position there may be many jobs. For example, an enterprise may employ 20 Clerical Assistants, Grade 2. They all have the same position and title but the actual job or work performed could be different for each one.

Job
A job refers to the specific tasks and duties to be performed for a particular position. For example, a clerical assistant may have the specific tasks of drafting correspondence, drafting monthly reports and filing reports and documents.

They refer to **occupations**, not **jobs**.
In seeking to place people with disabilities successfully in jobs, your interest is not in occupation analysis or position analysis. Your concern is with job analysis.

Job Description
A job description is a written statement of all the important elements of a job. It is an outcome of the job analysis process. A job description usually includes the following:
- the position or job title
- the specific tasks to be performed
- the relationship between the job in question and other jobs in the enterprise
- responsibilities of the job
- working conditions, including wages and hours of work
- performance standards required in the job.

Job Evaluation

Job evaluation is a process to assess the relative worth of jobs, usually for the purpose of determining pay levels. It is a process of ranking jobs in order of importance and worth, without regard to the personalities performing the work.

Job analysis is one of the tools used in job evaluation. Job analysis is done first and can then be used to assist in the ranking of jobs and assessing their relative worth.

Job Specification
A job specification is a written statement of the qualifications and abilities required to enable the job to be performed satisfactorily. It is sometimes referred to as a **job profile, personnel specification or qualifications requirement.**
Sometimes the job specification is included as part of the job description. In other cases it is a separate document. The main content of a job specification includes requirements concerning:
- education level
- experience
- specific competencies
- personal characteristics.

A final term which is sometimes used in relation to the employment of people with disabilities is job coaching. This refers to a way of assisting people with disabilities in employment situations. It involves training people with disabilities to perform specific job tasks in an open employment situation.
As a placement officer your role is to undertake work and job analysis from a particular and specific perspective – the perspective of people with disabilities.
This requires:
- knowledge of the concepts of work and job analysis and how to use them
- the application of this knowledge to assist people with disabilities to find employment.

HOW TO DO WORK ANALYSIS

Work analysis involves a systematic examination and assessment of jobs in:
- an entire enterprise
- a particular department
- a section or unit within a department.

The **general** purpose of work analysis is to advise enterprise managers on how they can improve the overall performance of their enterprises. This includes:
- identifying work that is not being done at all
- identifying work that is being done too slowly, thereby creating bottlenecks.

Work Analysis: The Steps
Work analysis involves a combination of systematic procedure and creativity.

The systematic procedure involves a number of key steps:
- Start with a general overview of the enterprise by **observing** what is going on. In doing this, you are not operating as a management consultant mandated to improve the performance and profits of the enterprise. You are operating as a placement officer, trying to find suitable jobs for people with disabilities. To do this you need to find out how the enterprise operates in general, including the following:
- What raw materials are used?
- How are the raw materials transported and stored?
- What processes are involved?
- What products and services are produced?
- What is the general working environment?
- Does the enterprise appear to be expanding?

- What appears to be the enterprise culture?
- Are any people with disabilities employed?

- **Next, identify** specific departments, sections or units where there are opportunities for employing people with disabilities. You need to have a good knowledge of the different kinds of disability, the ability profile of the people with disabilities in your area, and of jobs people with disabilities have done successfully. You do not need to have **individual** people with disabilities in mind.
- **Observe** the general work that is taking place in the identified department or section. For example, ask yourself:
- Is the work flowing smoothly?
- Are there any signs of bottlenecks or of work piling up?
- Are there any signs of workers rushing and under pressure?
- Is the workplace clean and tidy?
- **Observe** workers performing individual jobs. If job descriptions are available, compare your observations with the written tasks and duties in the job description.

JOB AND WORK ANALYSIS

- **Identify** any gaps between acceptable and actual performance levels. Try to identify the causes of these gaps.
- **Talk to workers** about their jobs and any difficulties they have in meeting performance standards.
- **Discuss** your observations and tentative conclusions with management, highlighting the possibility of creating some additional jobs to overcome the identified performance problems.
- **Prepare** a proposal for creating some additional jobs. You should include an outline of the job descriptions for the jobs to be created.
- **Indicate** the broad profile of the people with disabilities you believe could handle these jobs.

The enterprise may agree to create one or two new jobs but may argue that these should not be offered to people with disabilities. You must resist this vigorously and advocate strongly for people with disabilities to be given the opportunity.
Refer to:
- successes in other enterprises employing people with disabilities
- the reliability and commitment of workers with disabilities
- financial incentives available to the enterprise if it employs people with disabilities
- legal requirements
- the follow-up assistance you will be able to provide through the employment service.

If your efforts result in a decision to offer the jobs to people with disabilities, make every effort to refer people who make a good match. This will build the confidence of the enterprise in your ability to provide good quality services. It will also build your confidence in using work analysis as a tool to assist people with disabilities.

The **creative aspects** of work analysis are just as important as the process of systematic observation.
This involves:
- seeing things that others do not see
- visualizing how a person with a disability could fit in to a particular department, section or unit
- suggesting innovative approaches to problems.

The following example shows a situation in which work analysis identifies that some work is not being done at all, due to pressure to reach daily output targets.

The placement officer recommends to the enterprise that it create one additional job to do all the faxing, photocopying and collating, and that the job be offered to a person with a disability.

In work analysis, you should remember that:
- the objective is to assist people with disabilities to find suitable jobs
- people with disabilities can contribute significantly to performance improvement
- the enterprise creates the jobs - the enterprise needs advice and guidance in this job creation process
- enterprises operating under quota laws will welcome work analysis interventions as a way to enable legal obligations to be met
- work analysis can lead to work trial and work experience opportunities and to related opportunities for on-the-job training
- jobs for people with disabilities should not be jobs offered out of charity or conscience.

THE BENEFITS OF JOB ANALYSIS

As described previous chapter, job analysis is a systematic and detailed process of breaking down work performed into a number of detailed tasks. It involves examining the demand side of labour markets to find out what types of workers are needed by enterprises if the companies are to perform efficiently.

For enterprises, job analysis has many general uses including:
- supporting general recruitment and selection processes
- supporting the job matching process
- appraising staff performance
- assisting in staff promotion exercises
- identifying training needs.

Job analysis is a tool that can provide enterprises with the means to deal with:
- individual issues and problems which arise in the enterprise
- organizational needs, particularly in restructuring exercises
- legal requirements
- workplace labour-management issues.

All four of these areas are of concern to people with disabilities.

Job Analysis and the Individual Worker

Job analysis makes it easier for enterprises to manage their human resources (personnel) function in a systematic and structured way. As such, it also makes it easier to engage workers with disabilities on grounds of their potential contribution to the business, rather than due to a legal obligation or on grounds of charity or conscience.

Job analysis assists **individual** people with disabilities by:
- improving their prospects for placement in meaningful, rather than token, jobs, through a matching process that meets the requirements of both the job seeker with a disability and an enterprise with job vacancies
- providing the means to modify job descriptions so as not to exclude people with disabilities
- providing a basis for broadening people's with disabilities job horizons while also moderating unrealistic expectations on the part of both individuals and enterprises
- highlighting the induction and on-the-job training (or job coaching) that people with disabilities may need to enhance their contribution to the enterprise.

Job Analysis and the Enterprise as a Whole
Job analysis makes an important contribution to the enterprise as a whole, particularly in times of restructuring, organizational change or technological innovation, ensuring downsizing and retrenchments are handled objectively and without discrimination
- identifying new jobs that provide challenges and opportunities for advancement for people with disabilities such as, for example, jobs with computers and their applications
- providing opportunities for workers with disabilities to benefit from multiple-skilling and job broadening. This involves enabling workers with disabilities to undertake new tasks and responsibilities beyond those specified in their original job descriptions and so contributes to a sense of having a career rather than having a job.

Job Analysis and the Law
Job analysis can be used to help to determine whether enterprises comply with laws and regulations. This is particularly important for people with disabilities who frequently face discrimination and unequal treatment in accessing employment opportunities and in employment itself.

Job analysis can assist people with disabilities in their quest for fair treatment under the law by:
- assisting in the implementation of quota schemes. For example, where the law indicates that a proportion of jobs in an enterprise must be allocated to people with disabilities, job analysis can assist the employer to identify suitable jobs
- contributing to the application of non-discriminatory legislation.
For example, job analysis can help to ensure that pay is based on the job rather than on the person performing it
- assisting in ascertaining whether an enterprise qualifies for financial incentives such as subsidies and tax concessions. For example, if an enterprise employs people with disabilities who have lower productivity than people without disabilities doing the same jobs, job analysis can help to determine productivity.

Job Analysis and Labour Relations
Job analysis can make an important contribution to enterprise-level labour relations by providing a useful tool for the prevention and resolution of disputes.
Job analysis can assist people with disabilities in their relations with management by:
- providing information to prevent individual disagreements escalating into larger conflicts. For example, if a worker with disability threatens to take his case to the labour court because he claims he is being paid less than a worker without disability doing the same job, job analysis can be used to show whether, in fact, the jobs are the same.
- reducing conflict. For example, in cases where workers with disabilities fear being dismissed on the introduction of new machinery because new tasks will be involved, job analysis can help to identify the new tasks to be performed and can show how workers with disabilities can be retrained to do these tasks.

Job analysis is not a threat to people with disabilities or an infringement of their rights.
Done properly, and in consultation with individual workers and their supervisors, it can be a powerful tool to support the employment of people with disabilities.

THE ELEMENTS OF JOB ANALYSIS

Job analysis is a systematic process involving five main elements:

Purpose: What is the general nature of a particular job? Why is it important?
Tasks: What are the major tasks of the job? How complex are they? How do they relate to other jobs in the section or department?
Environment: What is the working environment in which the tasks are performed?

Working conditions: What working conditions apply to this job?
Qualifications: What education, knowledge, skills and attributes are required for the performance of this job?

These five elements apply to the analysis of **all** jobs for **all** people.

For example:
- knowing that a job requires a worker to move around is not enough. The **degree** of mobility required in the job is an essential factor in determining its suitability for a person with a physical disability.
- the level of hearing ability required for a job, and the extent to which the need for hearing can be replaced by sight in the job, could determine whether it is suitable for a person with a significant hearing impairment.

To do this effectively you need to know a lot about the work-

The purpose of the job
Job analysis requires that each individual job is understood in the overall context of the enterprise or organization. You do not need to make a detailed analysis of actual tasks at this stage. The emphasis is on **why** the job exists and how it contributes to the overall performance of the enterprise. For example:

- Where does the job fit in to the overall work effort of the enterprise?
- Is the way in which the job is currently organized the only way in which it can be organized? Is this intrinsic to the job or could it be changed to enable it to be performed by a person with disability?
- Is it a job with a service orientation?
- Is it a direct production job in which the worker produces one part of a final product?
- Is it a team job?

Tasks
The next stage is to identify the specific tasks involved in a job. This is a major element of job analysis. The questions you need to ask include:
- What tasks does the worker actually do in this job?
- What are the most frequently repeated tasks?
- How many different tasks does the worker have to perform?
- What is the sequence of tasks?
- What tools and equipment are used? Are computers used?
- Which tasks involve close cooperation with other workers? (in meters).

In identifying the tasks it is necessary to use words that describe the behaviour required. For example, it is too vague to use terms such as *handles boxes, delivers messages, arranges correspondence*. Instead, use words that indicate the actual behaviour required, such as *lifts, carries, bends, stretches, walks, stands, writes, talks, listens, calculates, counts, sorts, climbs,…*
Next, you should elaborate the task by specifying its dimensions and context. For example:
- "Stands for periods of 40 minutes, without sitting, at a counter where many customers require quick service"
- "Sits and receives telephone calls, up to 20 per hour, and writes short messages for each call".

Precision is crucial. Without precision in the process of task identification it will be much more difficult to:
- determine whether the job can be performed by a person with a disability
- identify which tasks might be eliminated from a job to make it more suitable for a person with a disability

- achieve an accurate job match. An inaccurate job match could possibly result in a worker with a disability failing to hold a job after placement
- identify what adaptations to the work environment, tools and equipment would make it more suitable for a person with a disability.

The job analyst could then have suggested some minor reorganization of the workplace, such as placing the central cashier closer to the cash collection point.

The environment
The above example shows that, as well as identifying specific tasks, job analysis involves specifying the working environment in which the job is performed. For example:
- Is the job performed in a small area? One room? Several rooms?
The whole building? Indoors and outdoors?
- What is the physical environment with regard to noise, dust, lighting, temperature?
- What is the pace of work?
- What interaction is required with other workers?
- Are co-workers available to assist if necessary?
- How accessible is the workplace and the particular workstation?
- What interaction is required with customers?
- What is the nature and extent of supervision?

Working conditions
Workers with disabilities, like other workers, are interested in the terms of employment concerning pay, hours of work, overtime requirements, leave allowances, social security benefits, sickness benefits and other allowances. As well as these, workers with disabilities need to know additional things, such as flexitime arrangements, the availability of transport, medical benefits and work breaks. These issues may influence the decision of a person

Qualifications
When you have analysed the other four elements you should go on to examine the qualifications required for the job. This should not be left to the enterprise alone. Frequently, enterprises overstate the qualifications required, with the result that many people with disabilities are excluded.
For example:
- A hotel may require a maintenance gardener to have a university degree in horticulture. This qualification is considerably higher than that necessary for the effective performance of the job
- An enterprise may stipulate that applicants for a cleaner's position must have completed six years of secondary schooling.

Education
This refers to the level of schooling and post-schooling a person may have. It is usually identified by the number of years and the specific subjects or fields studied. Many enterprises insist on the completion of secondary schooling or a university degree as **essential** for almost every job. Many people with disabilities, particularly in developing countries, do not have access to education, often because of the way in which education is delivered.
Even if their intellectual capacity is high, many people with disabilities miss out.

Knowledge
This refers to those things a person must know in order to perform a job. It is not the same as education. As noted above, education level is often an indicator of general

intellectual capacity. Knowledge refers to the specific information required to perform a particular job, for example, knowledge of:
- financial procedures
- particular computer programmes
- first-aid procedures
- road laws
- disciplinary procedures.

Skills
A skill is the ability to do something involving mind-body coordination. For example:
- Riding a motorcycle
- Operating a keyboard
- Using a sewing machine
- Cooking food.

A key element of job analysis is to identify the **specific** and **essential** skills required to perform a job to an acceptable level. This involves identifying first the tasks and then the skills required for each task.
Like everybody else, people with disabilities have proven capacity to acquire skills. Skills of all types can be taught through a sequence of instruction, demonstration, supervised practice, repetition, and then supervised and, eventually, unsupervised practice on-the-job.

Physical attributes
Some jobs require specific physical attributes such as the ability to walk, stand, lift or climb. Others (e.g. police, airline attendants) have requirements concerning height and weight. Your task is to ensure, as far as possible, that requirements for physical attributes do not exclude people with disabilities who in other respects satisfy the job specification.

Intellectual attributes
Some jobs require specific intellectual attributes such as the ability to calculate, plan, assess, concentrate, comprehend, analyse, decide and judge. Some people with disabilities, particularly those with learning disabilities, may face some difficulties in meeting such requirements. As a placement officer your task is to discourage and minimize exclusion. People with learning disabilities **can** perform tasks that require a range of intellectual abilities. In some cases, this will require structured and repetitive training but there is ample evidence that such training can be highly effective.

Sensory attributes
Some jobs require specific sensory abilities, including the ability to see and hear. Examples of such jobs include traffic police and taxi-drivers. It is important, however, to be open-minded to ensure that people with disabilities are not excluded unfairly from jobs, based on their sensory impairments. For example, people with hearing impairments have proven to be excellent waiters and many blind people are highly competent interpreters, computer programmers and operators.

HOW TO DO JOB ANALYSIS

Job analysis involves five basic steps:
Step 1 Consider the enterprise as a whole
Step 2 Decide which jobs to analyse
Step 3 Collect information
Step 4 Record information
Step 5 Analyse and interpret the collected information.

Step 1 Consider the enterprise as a whole
Information on the enterprise as a whole is essential to find out what is possible. Your aim is to identify which parts of the enterprise offer the best prospects and opportunities for persons with disabilities. You should start the process of job analysis by finding out:
- What is the purpose and goals of the enterprise?
- What are its products and processes?
- How big is it?
- What is happening at present?
- Is it growing or contracting?
- Is it developing new products?
- Is it introducing new technology?
- What is the culture of the enterprise?
- Is it dominated by economic considerations?
- Are social objectives important?
- Are people with disabilities currently employed in the enterprise?
- How many?
- In what jobs?
- Have people with disabilities been employed there before?
- In what jobs?
- Why did they leave?

Step 2 Decide which jobs to analyse
Once you have a general knowledge of the enterprise, its products, processes and job opportunities, you can then decide whether to analyse all jobs or whether to be selective. Clearly, to analyse all jobs is a major and time consuming task. You should focus on those jobs that offer the best opportunities for people with disabilities.
Where there are a number of jobs with the same position (e.g. sales assistant, clerical officer) it will not be necessary to analyse every job to determine its suitability for a person with a disability. Usually, the jobs will be fairly similar, so the analysis of a small sample will often be sufficient to
assess the opportunities for people with disabilities.

Step 3 Collect information
In collecting information about a job you should find out:
- the actual job tasks
- which tasks are essential and which peripheral to the job how tasks are actually performed
- how much time is spent on each task
- why the tasks are important
- what materials and equipment are used
- what procedures have to be followed
- the working conditions
- the working environment
- the critical skills required for each task.

While collecting the above information you should also be thinking about what accommodations might be required to enable a person with a disability to do the job.

For example:
- Will some modification of working hours be required, such as starting time, finishing time, length of breaks?
- Is there scope for some tasks to be performed by others without the job becoming meaningless?
- Is there scope for an exchange of tasks with another job?

- Will materials and machinery need to be adapted?
- Will tools and equipment need to be adapted?
- Will the particular workstation require some modification?

Interview the employer

The employer will have a general idea of the job tasks and the abilities required to perform them. This may be based on a written job specification or, alternatively, the employer's experience with the job.

If the job has not been done before by a person with disability you will need to discuss it in detail with the employer to determine whether the job, with or without modifications, is suitable.

As noted either, in many cases, employers rely on outdated job descriptions which exclude people with disabilities. Interviewing employers and convincing them to consider *how* to employ disabled persons, rather than *how not* is a part of the job analysis process.

Interview supervisors and co-workers

Supervisors and co-workers usually have a better practical knowledge of a job than the human resources (personnel) manager or other senior managers.

Supervisors and co-workers will be in a better position to explain **all** tasks of the job in **all** situations.

For example, it would be hard to find out the exact time pressures associated with a particular job from a job description or from interviewing a human resources manager. A job in the packing section of an enterprise will be different when there is a rush order, as compared with the normal pace of work.

Supervisors and co-workers have detailed knowledge of time pressures, overtime requirements, teamwork, rest periods and quality standards, among many things. All of these are vital factors in deciding which people with disabilities are best suited for particular jobs.

Interview people who have done the job before

People who have done the job before, or who have done similar jobs, can tell you what the job is really like. They can give you important information, not just about the specific tasks involved but also about their feelings and concerns about the job. These might include the positive benefits of being part of a team, job satisfaction, working with supportive colleagues and being rewarded for high performance. They might also tell you about negative aspects of the job, such as isolation, monotony, stress, lack of support and the implications of sub-standard performance. All this information will help you to decide if the job is suitable for a person with a disability. If you can find someone with a disability who has experience of this job (or one similar to it), they will be able to give you very useful information.

Observe the job being performed

Where possible you should observe a person actually performing all the tasks associated with a job. This will provide a good indication of the physical, sensory and intellectual attributes required for the effective performance of the job. This in turn will help you to develop a profile of the people with disabilities who would be able to perform the job to an acceptable standard.

Observation can also be used to verify information collected from supervisors, co-workers and managers.

Observation, however, does not tell you what a person **feels** about a job and how it **affects** the person doing it. Observation alone is not enough and should be supported by other approaches to collecting information.

Do the job yourself

If possible, you should do the job yourself. Even a short period of actually performing the tasks – lifting, counting, walking, listening and so on – will help you to confirm your observations. It will also give you another perspective on your interviews with others and will give you a better understanding of the job. In these ways it will assist you in relating your analysis to the employment needs of people with disabilities

Step 4 Record information
Once the job tasks have been identified, observed and analysed, you need to record this information in a systematic manner. This is usually done in the form of a job description and job specification. The more detailed the information collected and recorded, the better the chances of identifying a person with disability suitable for the job.

As you prepare the job description and job specification you should:
- avoid over-estimation of requirements because this is likely to exclude people with disabilities
- distinguish between requirements which are essential and those which are desirable or preferred
- provide scope for people with disabilities to develop their potential. Don't exclude them because they do not meet the exact requirements

Step 5 Analyse and interpret the collected information
When you have finalized the job description and job specification in a way that does not exclude people with disabilities, you can use this information to decide which people with disabilities should be considered for the job.

You may not always find a **perfect match**, but if you have written the job description and job specification to avoid the exclusion of people with disabilities, you are likely to identify an acceptable match.
If possible, refer two or three people for each job vacancy. It might stimulate the employer to offer a second job or a work trial to a suitable candidate.

Those who are unsuccessful will gain valuable experience of the interview process.
Remember that if the enterprise has not employed people with disabilities before, it is important that you do everything possible to make the first placement a success.

PREPARING A JOB ANALYSIS CHECKLIST

Your work in job analysis will be easier if you follow a checklist. You should design the checklist to bring together all elements of a job and all the attributes the job seeker should have in order to perform the required tasks.
Your checklist can be divided into seven main parts:

Enterprise information
Job title and conditions
Job tasks and special characteristics
Environment characteristics
Job requirements
Employer information
General comments.

You can use the following examples to prepare your own checklist.
Meals
Transport assistance
Discounts

Other
- Number of employees in this same position
- Number of employees during the same working hours
- Opportunities for career advancement
Nil
Low
Possible
Probable
No procedures in place

Job tasks and characteristics
- Lifting and carrying
Very light
Light
Average
Heavy
Comments
- Concentration
Breaks after less than two hours
Every two to three hours
Comments
Every three to four hours
After four hours or more
- Work pace
Slow pace
Steady pace
Sometimes fast
Continuous fast
Comments
Enterprise information
- Enterprise
Name
Address
Telephone number
Fax
E-mail
Contact person (Name, Title)
- Number of staff
Total
Male/female
Number of workers with disabilities
- Main products/services

Job title and conditions
- Job title
- Wages
Hourly
Weekly
Monthly
- Hours
Per day
Per week
Per month
- Full or part-time
- Day or evening work
- Weekday or weekend work
- Benefits
None
Sick leave
Medical benefits
Paid leave
Dental benefits
Frequent
On-going
Comments
- Visibility to customers/public
Customers not visible
Occasionally visible
Frequently visible
Constantly visible
Comments
- Type of tools and equipment
Simple
Complex
Mechanical
Electrical
Electronic

- Use of tools and equipment

Infrequent	Under supervision
Very frequent	Without supervision

Environmental characteristics

- Work access

Full access	required)
Reasonable access	Comments
Limited access (modifications	

- Orientation

Confined to a small area	Entire building
One room	Comments
Several rooms	

- Number and sequence of tasks

One task only	Seven or more tasks in sequence
Two to three tasks in sequence	Comments
Four to six tasks in sequence	

- Changes in daily routine

No task change	Seven or more task changes
Two to three task changes	Comments
Four to six task changes	

- Availability of task reinforcement

Frequent (hourly)	Minimal (receipt of pay)
Intermittent (daily)	Comments
Infrequent (weekly)	

- Availability of co-worker support

None	On-going
Intermittent	Comments
Frequent	

- Task assistance: Prompts

No prompts	On-going
Intermittent	Comments
Frequent	

- Task assistance: Supervision

Very limited	
Intermittent	

- Housekeeping

Poor	Excellent
Reasonable	Comments
Good	

- Protective clothes and equipment

Not necessary	Provided and used
Necessary but not provided	Comments
Provided but not used	

Job Requirements

- Appearance (grooming, neatness)

Not important	Absolutely essential
Reasonably important	Comments
Highly important	

- Verbal communication

None required	Clear speech in sentences essential
Unclear speech is acceptable	Comments
Key words are needed	

- Functional writing

None required	Write sentences
Write key words, figures and symbols	Write fluently

Comments
- Temperature
Normal — Almost always hot (or cold)
Sometimes hot (or cold) — Comments
Frequently hot (or cold)
- Noise
Normal — Almost always excessive
Sometimes excessive — Comments
Frequently excessive
- Lighting
Normal — Almost always poor
Sometimes poor — Comments
Frequently poor
- Dust
Normal — Almost always excessive
Sometimes excessive — Comments
Frequently excessive
- Mechanical hazards
None — Many
Few — Comments
Some
- Chemical hazards
None — Many
Few — Comments
Some
- Calculations
None required — Complex calculations
Simple counting — Comments
Simple addition/subtraction
- Object discrimination (e.g. size, shape, texture)
Not important — Highly important
Low level required — Comments
Reasonable level required
- Ability to tell the time
Not required — Accuracy to the minute
Need to identify work breaks — Comments
Accuracy to the hour
- Ability to cross streets
Not required — Major road, no traffic lights
Minor street, no traffic lights — Comments
Major road, traffic lights

Employer information
- Financial support required
None required — Absolutely essential
Desirable — Comments
- Functional reading
None required — Read sentences
Read key words, figures and/or symbols — Read fluently
Comments
- Watching requirements
None required — Constant visual attention
Limited visual attention — Comments
Frequent visual attention
- Listening requirements

None required
Limited ability required
Reasonable ability required
High level ability required
Comments

- Initiative requirements

Rarely has to take initiative
Sometimes
Frequently
Almost always
Comments

- Social interaction (with other workers/customers)

None
Limited contact (e.g. cleaner)
Moderate
Frequent
Constant (e.g. shop assistant)
Comments

General comments

- General willingness to employ people with disabilities.

- Particular issues or problems in placing people with disabilities in this enterprise.

- Particular benefits in placing people with disabilities in this enterprise.

- Job accommodations

Negative approach
Indifferent
Supportive with reservations
Very supportive
Comments

- Special requirements (things the individual employer regards as essential)

Punctuality
Appearance
Politeness
Loyalty
Listening and visual ability
Other
Comments

- Job description and job specification

Available
Not available
In progress
Comments

- Labour turnover

Very low
Average for industry
High
Very high
Comments

Engaged in promoting workplace diversity and anti-discrimination.

The second major benefit of diversity, receiving a score of 38% in the EBTP (European Business Testing Panel) survey, is its ability to enhance a company's reputation and image, and its standing within local communities.
To achieve this, good practice companies take part

A further important business benefit of workplace diversity is the opportunity it affords to improve innovation, leading to new products and services, and potential new markets indicators used are: the increase in the representation of women, people with disabilities and ethnic minorities, especially at senior levels, in some cases linked to specific targets for each;

The Ethical Case for Diversity

Increasing numbers of companies stress that ethical reasons are the primary driver for adopting equality and diversity practices. Simply stated, they are taking action because

'it is the right thing to do'. These companies are aware of changes in society and in social values, and their impact on how businesses operate.

They know that the public has higher expectations of how companies ought to do business in relation to equal opportunities, fair trade, ethical investment, environmental impact, impact on local communities, individual human rights and other social justice issues.

In response to these changes, many companies are making strong links between Diversity and Inclusion strategies on the one hand, and Corporate Social Responsibility (CSR) on the other.

Implementation of equality and diversity practices

Successful implementation of diversity policies and practices depends on a number of key organisational factors. Companies that manage this well approach diversity and equality as a culture change process, using lessons learned about managing change to ensure success.
These lessons include defining a clear case for action, building leadership commitment, establishing infrastructure to support implementation and communicating diversity and inclusion principles to staff, customers and other stakeholders.

Diversity in these companies is a business-wide concern, rather than being HR owned without involvement from other business functions.

To which of the following areas does the diversity initiative relate?
Responses from 70 to 90%

Policies and procedures
Strategy implementation
Leadership development talent management
Employees' development & promotion
Recruitment selection retention
Organisational factors

To achieve sustainable growth, it is imperative for businesses to become skilled at managing and harnessing the full potential that diversity can offer.

Similarly, diversity and inclusion practices are credited with having a beneficial impact on improving managerial styles, skills and performance in areas such as communication, people management, goal setting and planning.

Based on your experiences and/or expectations, which of these benefits can a diverse workforce bring to business? (number of respondents)

- Access to new labour pool
- Benefits related to company's reputation
- Commitment to equality and diversity as company values
- Innovation & creativity
- Improved motivation & efficiency
- Legal compliance

Measuring the impact of diversity approaches

One of the key challenges identified by companies in relation to addressing workplace diversity is the difficulty of measuring the results of diversity policies.
intangible factors already exist.
These include the Harvard Balanced Scorecard[1], the European Quality Model[2] and the Measurement Framework for Diversity developed as part of the EC Methods and Indicators study.

1. www.hbs.edu
2. www.efqm.org

The models combine qualitative and quantitative approaches, and take account of the links between processes that drive performance and the results of strategy.

Challenges in addressing workplace diversity - Difficulty measuring results

Half of the companies in the EBTP survey have yet to develop diversity policies and practices and point to the lack of information and awareness of diversity issues as their biggest challenge.

Nearly 70% of EBTP companies that have or are implementing diversity policies do not have systematic measurement or review mechanisms in place for their diversity initiatives.

Adecco runs 'Disability and Skills' programmes to raise awareness of the importance of focusing on skills, and provides practical approaches to achieving better integration at work for people with disabilities. This includes running 'disability demystification' workshops for colleagues. Through role playing - using a wheelchair, being blindfolded or having sound excluded from their ears - colleagues are sensitised to the impact of disabilities. These workshops enable people to gain insight into the difficulties faced by people with disabilities at work, so they can then help them find a suitable opportunity.

Also, clients are given guidance about how to welcome someone with a specific disability within their teams, and prepare the working environment. We also share real examples of how people with disabilities successfully use their skills at work. We are spreading the word: non-discrimination isn't just morally better; it also makes good business sense.

Highlights
- Implementation in six EU Member States
- Non-discrimination and disability inclusion training to all staff
- Skills gap training offered to candidates with disabilities to help ensure long-term employment
- Access to work for 9 578 persons with disabilities at European level in 2004

Disability is not an obstacle to competency.
Jérôme Caille, CEO Adecco

Diversity leadership teams in each major business or region drive change towards an environment in which every employee can contribute fully and feels valued and included.

The increased awareness has transformed the organisation and created an environment encouraging a significant number of local initiatives, typically related to improving communication, inclusion, building
trust, improving teamwork and cultural awareness.

Bertelsmann's premise was simple: When given appropriate tools and an inclusive working environment, people with disabilities are as capable as their colleagues without disabilities of enhancing the performance of the company, employee motivation and loyalty.
it has produced TV commercials aimed at breaking down misperceptions about people with disabilities broadcast by Bertelsmann companies across the EU, reaching an estimated 52 million viewers.

Highlights
generated ideas for innovative aids to help employees with disabilities (car that gives wheelchair users mobility without having to leave their wheelchair).
4.3% of employees are people with disabilities, nearly double the 2002 figure

This number is expected to rise as the company's reputation as an equal opportunities employer increases and as more people with disabilities are moved to apply for advertised vacancies.

At philosophy called Effortless Inclusion, which represents BT's (British Telecom) thinking about equality and diversity developed in the last 20 years.
Effortless Inclusion is research driven, influenced by future gazing and underpinned by sophisticated demographic analysis, enabling BT to collect data about changes in its workforce composition and customer base. This information has helped to develop concepts such as spoken text messages for the visually impaired.

An HR policy component; a guide to age diversity; management communication, guidelines and empowerment; employee development consultations; orientation meetings for employees and their spouses; and individual coaching and development.

The Disability in Action Taskforce at Goldman Sachs works across three areas: accessibility, communication and awareness, and recruitment and retention.

What were the business challenges that served as the motivation to the diversity initiative?
Procurement product and / or service development, relationship and / or service

Highlights
Economic effectiveness, competitiveness, profitability, and / or competitive advantage 77%

Commitment to equality and diversity as company as company values 100%

People first
People with disabilities are not conditions or diseases. They are individual human beings. For example, a person is not an epileptic or a victim of AIDS but rather a person who has epilepsy or a person who has AIDS. First and foremost they are people who may in addition have one or more disabling conditions

"When opportunities and reasonable accommodation are provided, people with disabilities can contribute valuable skills and abilities to every workplace, and contribute to the economy of our society."

Checking the three criteria in practice
For example, if one considers the image of the funnel below, it includes anyone who initially believes that they are people with disabilities and as the funnel draws narrower towards the end, it begins to eliminate those who do not meet all three of the qualifying criteria in the sequence as set out in the definition.
A practical way of determining this, is to ask and seek answers to targeted questions to decide between the employer and the applicant/employee if someone fits the definition. Following is a checklist with two examples which serve as a practical tool to determine the existence of a disability.
This task should be conducted if it is obvious that the person has a disability or the person has indicated on his/her application form that she/he has a disability. It can also be done if the person in your employ indicates that she/he has a disability for the purpose of seeking reasonable accommodation. It is very important to remember, however, that one is not allowed to give this information to any third party such as medical aid schemes and insurance companies without the consent of the person affected.

Accommodation, which are modifications or alterations to the way a job is normally performed, should make it possible for a suitably qualified person with a disability to perform as everyone else. The type of reasonable accommodation required would depend on the job and its essential functions, the work environment and the person's specific impairment.

Reasonable accommodation measures may include:
● Assistance in making the workplace more accessible on the kind of person's limitations and needs – for example, amongst others, removal of physical barriers and access to information and technology (equipment and software)
● Workstation modifications
● Adjustment to work schedules
● Adjustment to the nature and duration of the duties of the employee at work, either on a temporary or permanent basis
● The reallocation of non-essential job tasks and any other modifications to the way the work is normally
performed or has been performed in the past.

The criteria for reasonable accommodation includes three interrelated factors:
● First, the accommodation must remove the barriers to performing the job for a person who is otherwise qualified. The employer must take steps, wherever reasonably

practicable, to mitigate the effect of an individual's disability to enable him or her to play a full part in the workplace in order to achieve his or her full potential

● Secondly, it must allow the person with a disability to enjoy equal access to the benefits and opportunities of employment. All staff must have equal rights to promotion. The employer must take all reasonable steps to ensure that the working environment does not prevent people with disabilities from accessing or retaining positions for which they are suitably qualified

● Thirdly, employers can adopt the most cost-effective means consistent with the above two criteria.

Position	Tasks	Essential functions	Skills and capabilities
Division Manager.	● Programme management ● Budget management. ● Resource management. ● Staff and client management.	● Design programmes/action plans. ● Draw up budgets. ● Manage conflict. ● Manage client relationships. ● Writing reports. ● Reporting. ● Managing meetings.	● Good communication. ● Effective writing skills. ● Interpersonal skills. ● Ability to meet deadlines. ● Work in a team. ● Work independently. ● Leadership skills. ● Computer literacy. ● Ability to work under pressure.

Position	Tasks	Essential functions	Skills and capabilities
Head Chef.	● Cooking.	● Plan menus and functions.	● Good planning and organising.
	● Presentation and serving of food	● Do costing of menus and functions.	● Good communication.
	● Developing menus.	● Develop budgets	● Interpersonal skills.
	● Staff management.	● Prepare meals.	● Ability to meet deadlines and work under pressure.
	● Costing and budgeting.	● Develop recipes.	● Work in a team.
	● Purchasing.	● Supervise other chefs.	● Work independently.
	● Inventory management.	● Draw up budgets.	● Leadership skills.
			● Computer literacy.
Types of disability	Possible reasonable accommodation		

Physical	Buildings more than one story high should have a lift. Buildings that have stairs should have ramps to accommodate the needs of people with mobility impairments. Accessible toilet facilities should be close to the interview venue. In the case of older buildings where there are no lifts, interviews should be on the ground floor.
Deaf	The interview panelists should address the deaf interviewee and not the interpreter, including eye contact.
Totally blind	The interview panelists should not engage in non-verbal gestures or whispers.
Partially sighted	The employer should enquire as to the degree of lighting needed by the interviewee during the interview.
Intellectual disability	Interviews could be conducted on a one-to-one basis as opposed to a panel of people. Interview questions should be kept short and simple. Interviewers should exercise patience.

Integrating disability into the 10-step plan process

The Guide of Good Practice on Preparation, Implementation and Monitoring of Employment Equity Plans sets out a 10-step plan to preparing and implementing an Employment Equity Plan. The process of developing a plan should have three sequential phases.

These are:
Phase 1. Preparation
Phase 2. Implementation
Phase 3. Monitoring

Phase 1 Preparation
Step 1 Assign responsibility

The person assigned to this role, irrespective of whether or not the person has disability, should acquire further knowledge on Disability Management in terms of employment equity. This will assist the person in order to develop a comprehensive understanding of disability in the context of international and national standards.

Step 2 Communication, awareness and training

In order to equitably implement this step, employers should review their existing training methodology, programmes, tools and mechanisms to ensure that it is accessible to employees with disabilities.

Step 3 Consultation
Employers should use the opportunity to heighten the awareness of their employees of the value and importance of recruiting and retaining employees with disabilities.

Step 4 Analysis
When the employer embarks on this step, they must evaluate and review their recruitment policies and practices, as well as the manner in which they conduct their workforce profile to ensure that it is free from disability specific discrimination.

Employers should create an enabling environment that encourages employees with no self-evident disabilities to disclose.

Phase 2 Implementation

Step 5 Corrective measures and objectives

Employers must develop an implementation plan to address each of the factors identified in step 4 that adversely affect employees with disabilities. In this case, the cornerstone of the implementation plan will be reasonable accommodation. For example, if the employer found that the interview process is inaccessible to people who are deaf, they should consult with organisations for and of deaf people to provide reasonable accommodation policy and guidelines.

If people with disabilities are under-represented in all occupational levels and categories in the workplace, the employer could seek guidance from organisations that represent people with disabilities or relevant experts.

Step 6 Time frames established

Employers should take the opportunity set out in this step to set milestones and targets to ensure the representivity of employees with disabilities at all levels in the company.

Step 7 Allocation of resources

Employers may wish to consider creating a centralised budget for the provision of reasonable accommodation for employees with disabilities to enable them to achieve their objectives regarding disability employment equity planning. This budget should not be dependent or linked to other line function responsibilities.

Step 8 Communication of the Plan

Employers should ensure that any communication methods used to communicate the content of the Plan are fully accessible to all employees with disabilities.

Step 9 Integration of the Plan

Employers should attempt to integrate disability into all of the organisation's plans.

Phase 3 MONITORING

Step 10 Monitor, evaluate, and review

Employers should ensure that employees with disabilities are enabled to participate in this process through the provision of reasonable accommodation. Employers should also ensure that disability management is integrated in the key performance areas and responsibilities of managers.

Step 11 Report

Employers should ensure that the report is accessible to all employees with disabilities by making it available in various

Table 1. Cost increases due to accessibility in public buildings. Renovation and original barrier-free design compared to conventional (inaccessible) structures.

	Col 1 Cost increase due to accessible renovation	Col 2 original barrier-free design	Col 1/Col 2
Convention hall	0.12%	0.02 %	6
Town Hall	0.2%	0.05%	4
College Classroom	0.51%	0.13%	4

Shopping center	0.22%	0.006%	35

Table 2. Cost increases due to accessibility in residential buildings. Renovation and original barrier-free design compared to conventional (inaccessible) structures.

	Col 1 Cost increase due to accessible renovation	Col 2 original barrier-free design	Col 1/Col 2
High rise tower multi-family structure.	1.0%	0.25%	4
Single family homes, one floor	21%	3.0%	7
College dormitory	0.40%	0.10%	4

Source: Schroeder and Steinfeld (1979) The estimated cost of accessible buildings. US Department of Housing and Urban Development.

1. Why should I make information accessible?
2. How can I make information accessible?
3. What is an accessible information policy?
4. Meet the needs of ALL your customers
5. How can I let blind and partially sighted people know that accessible information is available?
6. Further information

Produce your information in a way that ALL your customers can read because ...
... it's fair
Blind and partially sighted people should receive information that is accessible to them. Information enables all of us to make decisions and lead independent lives.
... it's the law
There is now a legal duty to meet the information needs of your blind and partially sighted customers
... it makes business sense

There are almost million people in Serbia with a disability. This is a sizeable customer base which cannot be ignored. Meeting the needs of all your customers makes good business sense.

How do blind and partially sighted people read?

Blind and partially sighted people read information in different ways.

For many partially sighted people, well-designed print information using a minimum of 12 point text is enough, although we at RNIB recommend 14 point, to reach more people with sight problems.

Others will need this information in a different format to standard print. This could be larger print, spoken word audio on cassette tape, Braille, electronic documents on floppy disk or over the internet.

One format cannot suit everyone

You should produce information in a range of formats.

Isn't it expensive to produce information in different formats?

Making information accessible is often cheaper and easier than many people think. When compared with how much your company or organisation spend on standard print information, the cost is probably very small.

Adopting our Clear Print guidelines can be done immediately and at virtually no cost.

How do I begin?

One way to make sure your organisation is meeting the needs of all your customers is to develop an accessible information policy and guidelines.

Check the information you produce and prioritise it.

Some information should be available from the outset in different formats to standard print, for example information for mass distribution, aimed at older people, or on issues such as health. Other information should be available in different formats when a customer requests it.

When you produce information in a range of alternative formats it should be:

- Equivalent quality as standard print
- Same price as standard print
- Available at same time as standard print.

It is essential to plan the production of the alternative formats at the same time as planning your standard print version.

Accessible information guidelines will help you do this by making the production of alternative formats part of the planning process. It will also raise staff awareness of the needs of blind and partially sighted customers.

What’s the difference between accessible information and accessible environments?

It’s often forgotten or overshadowed by physical access issues. Both are essential for social inclusion. Information provision is an area that we are all responsible for in some way.

When people start to consider accessibility, they usually think of things like installing

ramps, toilet facilities, induction loop systems and Braille signage. Obviously physical accessibility is crucial for the effective inclusion of disabled people.

However, physical accessibility is not the only thing that services need to consider. A service is not truly barrier-free if the information it gives out excludes disabled people.

You might exclude people by not providing alternative formats, translation services or, at a very basic level, clear and well-produced information that is up to date and accurate.

Research has shown that a large number of people with disabilities are excluded from employment because of their inadequate or inappropriate education and training, combined with inaccessibility to the work place (lack of appropriate facilities) and ongoing stereotypes assumed by employers and educators A guiding principle behind this movement is that people with disabilities do not only require improved specialised services or benefits, but must be recognised as full citizens.

According to the **United Nations Standard Rules on the Equalisation of Opportunities for Persons with Disabilities, disability and handicap are defined as follows:**

The term disability summarises a great number of different functional limitations occurring in any population in any country of the world. People may be disabled by physical, intellectual or sensory impairment, medical conditions or mental illness. Such impairments, conditions or illnesses may be permanent or transitory in nature. The term handicap means a loss or limitation of opportunities to take part in the life of the community on an equal level with others. It describes the encounter between the person with a disability and the shortcomings in the environment and in many organised activities in society, for example, information, communication and education, which prevent persons with disabilities from participating on equal terms. Young people with disabilities must be viewed as citizens like any other with the right of access to employment, training, information and full adult status.

Companies with fewer than 100 employees have experienced a rise in employment, while those with over 100 have seen a decrease; and an employer knows very little about employment policies regarding people with disabilities or the abilities of people with disabilities to perform in the workplace. There is an overall shortage of accurate information concerning people with disabilities, allowing prejudices and stigmatisms to persist. E Today, with changes in technology and a shift to the computer age, the labour market demands a variety of new professional skills from its labour force. Increasingly, having an advanced education is a person's only guarantee for employment. At the same time, with the widespread use of computers and other technical equipment, less emphasis is being placed on physical strength. People with physical disabilities might therefore find fewer barriers to entry into today's ever changing workforce. Personal assistance is available to employed people with disabilities to facilitate work performance. Individuals with visual or hearing impairments require these services the most.

Employers can access government grants for the salaries of the personal assistant. Social responsibility among enterprises may be defined as the actions which:

- promote equal opportunities during recruitment;
- avoid exclusion within enterprises;
- promote the creation of new jobs;

- contribute to social integration in deprived areas - particularly among marginalized groups;
- implement aggressive manpower policies focusing on a reduction of internal and external stress factors.
- improve each individuals qualifications for work through training;
- improve upon the skills of training staff by updating them on the use of advanced aids and new technologies;
- achieve permanent employment through increased visibility of the skills people with disabilities posses; and
- vocational training Quotas are designed to enhance employment opportunities for people with disabilities.

Unfortunately, however, the results of this policy have not been fully or completely promising. For example, of the 167,900 employers in 1993 who qualified for the quota, only 15 per cent (25,800) had met the requirements by October of that year. Meanwhile, sceptics fear that employers will consent only to pay the levy and thus altogether avoid hiring people with disabilities. A disinclination to hire people with disabilities may in part be explained by legislation currently in place which protects these individuals from dismissal (discussed below) - a policy that many employers would like to avoid. Nevertheless, a surprising number of people with disabilities (an estimated 109,300 between 1993-1995) have been more successful in finding employment in smaller firms not covered by the quota.

Several Disabled Persons Act in some EU countries asks enterprises employing five or more people with disabilities to elect a "trustworthy person" to undertake the following tasks:

- stimulate further hiring of people with disabilities;
- provide assistance and advice to co-workers with disabilities;
- encourage the assignment of appropriate employment for people with disabilities;
- advise the company on how to avoid redundancy among workers with disabilities; and help ensure a healthy and secure work environment with reduced risks of injury.

The vast majority (83 per cent) of workshop participants have mental disabilities, followed by people with mental health problems, physical disabilities, blindness and hearing impairments. The scheme was considered to be inoperable; the agency in charge of the monitoring was perceived not to have the appropriate resources to monitor and enforce compliance and anyway it is was, practically speaking, impossible for firms to meet the target because the number of registered people with disabilities had declined. With the exception of Germany, data and statistics on youths with disabilities remain insufficient in many countries. Experience suggests that people with brain injuries are facing complex limitations in different degrees Most surveys concentrate on impairment and disability while handicap, in the strict sense, is not always covered.

Disability and poverty are often closely connected. Socio-cultural and economic deprivation will clearly create additional obstacles.